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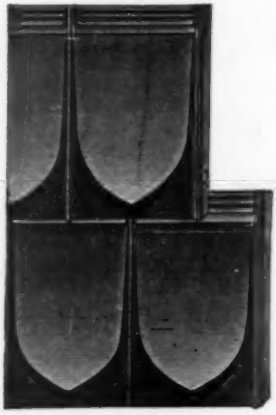

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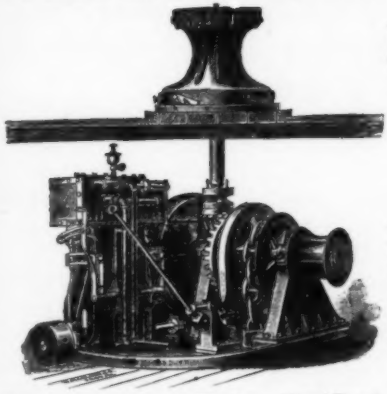

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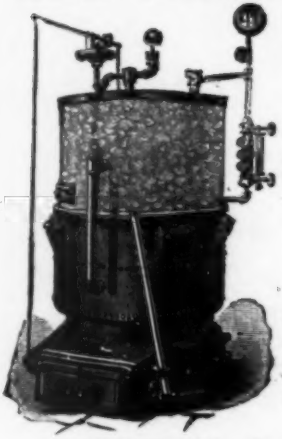

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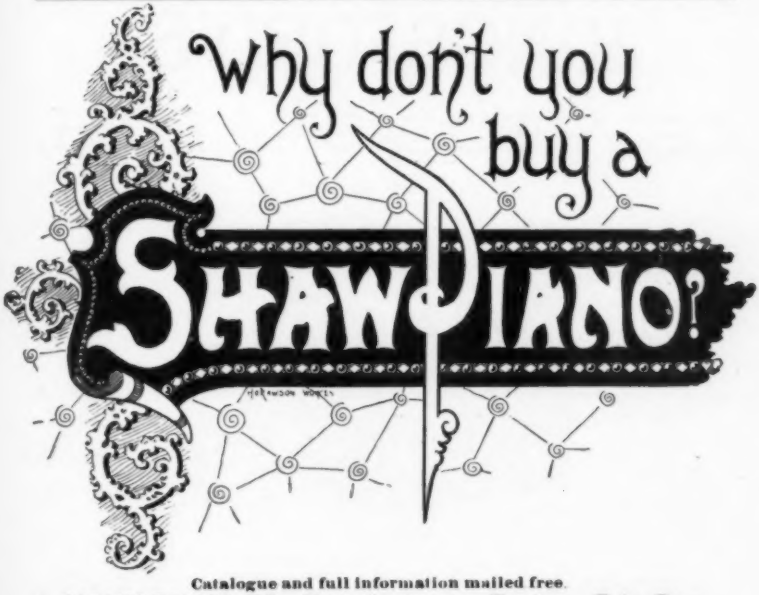

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Eugen D'Albert's Letter

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VOL. XIV. SEPTEMBER, 1893. NO. LXV.

RECRUITING AND DESERTION.

BY BREVET BRIG.-GEN. H. L. ABBOT, U. S. ENGINEER CORPS.

WITHOUT entering upon a discussion as to whether hope of reward or fear of punishment is most powerful in influencing the action of men, it may be assumed that both motives are potent and may well be appealed to when attempting to lessen desertion. As a matter of fact punishment for this offense in our service has become lighter and lighter for many years, thus not only acting in a less degree upon the fears of the culprits but also lowering the popular estimate of the criminality of the offense.

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It is interesting to trace how the degree of punishment for this offense has been reduced from time to time in our service.

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Translated from the German.

During my sojourn here I had frequent opportunities to make myself acquainted with the Knabe Pianos, and from fullest conviction I declare them to be the best instruments of America. *Should I return here for artistic purposes—which may be the case very soon—I shall most certainly use the Pianos of this celebrated make. I give this testimonial with pleasure, voluntarily, and entirely* unsolicited *for by the house of Knabe.*

EUGEN D'ALBERT.

New York, May 10, 1890.

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OF THE
UNITED STATES.

"I cannot help plead to my countrymen, at every opportunity, to cherish all that is manly and noble in the military profession, because Peace is enervating and no man is wise enough to foretell when soldiers may be in demand again."—SHERMAN.

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RECRUITING AND DESERTION.

BY BREVET BRIG.-GEN. H. L. ABBOT, U. S. ENGINEER CORPS.

WITHOUT entering upon a discussion as to whether hope of reward or fear of punishment is most powerful in influencing the action of men, it may be assumed that both motives are potent and may well be appealed to when attempting to lessen desertion. As a matter of fact punishment for this offense in our service has become lighter and lighter for many years, thus not only acting in a less degree upon the fears of the culprits but also lowering the popular estimate of the criminality of the offense.

Forty years ago the following punishment was frequently awarded by courts-martial, and excited no comment either in or out of the service:

The court does therefore sentence him, John Doe, to forfeit all pay and allowances now due or that may become due, to receive 39 lashes on his bare back, well laid on with a raw hide, to have his head shaved, and to be drummed out of the service.

Such a punishment left no doubt on the mind of the recruit that desertion was to be regarded as a disgraceful crime, and that its penalties were not to be lightly risked.

It is interesting to trace how the degree of punishment for this offense has been reduced from time to time in our service.

XUM

By Act of May 29, 1830, death as a punishment for desertion in time of peace was prohibited.

By Act of April 10, 1806, no more than 50 lashes could be inflicted, thereafter, as a punishment at the discretion of a court-martial.

By Act of May 16, 1812, punishment by stripes or lashes was prohibited.

By Act of March 2, 1833, lashes were revived as a punishment for an enlisted soldier convicted by general court-martial of the crime of desertion.

By Act of August 5, 1861, flogging was abolished.

By Act of June 6, 1872, branding or indelibly marking was prohibited.

Ten years ago, under the rulings of the Judge Advocate General, the punishment of ball and chain, and of shaving the head and drumming out of the service, had become rare in the army. The rigid construction of the statute of limitation in the case of desertion had also operated to lessen the fear of punishment. Finally the Executive Order of February 26, 1891, published to the army by General Orders No. 21, series of 1891, limits that maximum punishment for desertion without surrender, except under circumstances of special aggravation, to dishonorable discharge with forfeiture of all pay and allowances, and confinement at hard labor for a period varying from one to two and a half years, according to length of service.

Whatever may be thought of the expediency of this radical reduction in the punishment of desertion, it must be accepted as the settled policy of the Government. To keep the crime within limits has accordingly led to many attempts to mitigate the disagreeable features of the service, so far as possible. The success of these efforts can hardly be claimed as satisfactory. Desertion still exists to a disgraceful extent in our army.

Heretofore the only appeals to hope of a reward for honorable service have been the establishment of the Soldiers' Home, and of a retired list for enlisted men; the former has never been popular among our soldiers, and the latter has been practically abolished for new recruits by recent legislation.

On the continent of Europe the system of conscription supplies all the privates that are needed, but the problem of maintaining a full roster of instructed non-commissioned officers is not so simple. In England where, as with us, enlistments are volun-

tary, recruiting and maintaining an efficient army is a live question, and is now attracting attention. In March last a report was presented to the House of Commons transmitting information collected by Her Majesty's embassies on the continent upon the use there made of civil appointments as an inducement to long and faithful service. This system prevails extensively, chiefly as applied to non-commissioned officers; and some of the facts reported are not without interest as possibly applicable in a modified form to our own service.

Germany.—The plan of rewarding faithful service in the army with civil employment was inaugurated by the first king of Prussia, and with many modifications in detail has been continued to the present day. Under Frederick the Great one important object was to induce the enlistment of foreigners. After the defeat of Jena, and the restriction of the standing army to 40,000 men imposed by Napoleon, the object was to attract the best material of the nation to the military service. The present system dates from 1885. Under it every non-commissioned officer and private who has served with the colors for 12 years, and is of sound health, is entitled to a civil employment certificate. All appointments are at first on probation. A non-commissioned officer with one of these certificates also receives a service bonus of two hundred and fifty dollars. There are 491 classes of civil employment thus open to the army and navy. Of these there are 358 to which they have the exclusive right; affording a total of 92,345 places. Of the remaining 133 classes, from one third to one half are reserved for old soldiers and sailors; but where technical or scientific knowledge is required, an examination is obligatory, and competition is open to the civilian element and to retired officers. None of the offices set aside for candidates having employment certificates may be given to others, so long as the qualifications of such candidates suffice. These certificates do not carry with them any right to promotion or advancement, and they are to be given up so soon as the holder is retired on pension.

France.—Since 1889 Frenchmen have not been required to serve with the colors during peace more than three years, and as this term is not long enough to provide instructed non-commissioned officers, the difficulty already existing of filling these grades with suitable men called for special attention in framing the act.

The inducements offered were, a bounty on reënlistment, increased pay, a deferred bounty on termination of service, a pen-

sion after 15 years' service increasing yearly after 25 years, together with the right, if qualified, to be nominated to a State civil employment. When so appointed the retired non-commissioned officer receives the full pay of the civil office in addition to his pension. There are about 500 classes of civil appointments thus reserved, some of which, such as the lower grades in the Post-Office and in the Customs are numerous. This legislation has been eminently succesful, the number of reënlisted non-commissioned officers increasing up to the limit authorized (24,000) in two years after the passage of the law.

Austria-Hungary.—As military service is obligatory, the Government does not concern itself with the future of any but non-commissioned officers. The inducements held out to them by the Act of 1872 include extra pay, special employment, permission to marry, invalid or wound pensions, and civil employment after 12 years' service of which eight have been in the grade of non-commissioned officer. The offices thus thrown open are 59,641 in number, some of which are exclusively reserved and others open to competition but in which the old soldiers have the preference. The average number who yearly receive such appointments is 530. At present (1893) over 2400 non-commissioned officers, in possession of the necessary certificates, are serving in the active army in the hope of receiving civil appointments.

Italy.—The laws granting civil employment to non-commissioned officers of good character date from 1883 and 1887. Twelve years' service with the colors is required, and a civil employment certificate is given by the last commander. In the war office and in the admiralty all available posts are exclusively reserved for the holders of these certificates, amounting to 2285 appointments in the former and 317 in the latter. In the remaining public offices half of the appointments, upward of 4645 in number, are also reserved for them. In the railway companies one-third of the available appointments, amounting to upward of 1700 are also filled by deserving non-commissioned officers.

With an army so small as ours, and with the extraordinary desire for office among our people, might not good use be made of a civil employment certificate offered as a reward for say 10 years' faithful service in the army, and entitling the holder to preference in certain classes of Government employ? The limit to which such a system is applicable is a question calling for careful

consideration, but I am convinced that it might be extended with advantage to many employés of the Quartermaster and Engineer Departments. In fact several deserving ex-soldiers of the Battalion of Engineers are now employed on public works, both civil and military, as foremen, draughtsmen, and even in higher grades. Their habits of discipline and their well-tested trustworthy characters give their services exceptionable value, and the granting of a right to such positions would not only be a coveted reward for long and honorable service with the colors, but would also be of no little benefit to the public service as well.

THE ARMY ORGANIZATION, BEST ADAPTED TO A REPUBLICAN FORM OF GOVERNMENT, WHICH WILL INSURE AN EFFECTIVE FORCE.*

By Capt. E. L. ZALINSKI, 5th U. S. Artillery.

THE colonial motto "Noli me tangere" is practically that of the United States spreading the ægis of the Monroe doctrine over the American continent. Simple declarations may not always suffice. We must be ready to fight defensively and offensively. We may be attacked. Our citizens may be injured in their far-reaching commerce. The traditions of our republic are against the existence of large standing armies. Modern wars are apt to come on suddenly. We may be attacked by any of the great powers having immense armaments ready for immediate action. They will give but little time for us to train the large armies which we will have to levy suddenly to defend ourselves effectively.

We are, therefore, confronted with questions as to what may be done to be best prepared for the emergencies of war, without the burden and danger of a large standing army, raised either voluntarily or by conscription. In other words, how can we become a military people, potent for sudden emergencies, and not be a nation in arms? The people must not alone be patriotic in the face of emergencies, but they must be willing to prepare for them in times of peace. How can this best be done with the least interference with the avocations of peace?

MILITARY INSTRUCTION IN SCHOOLS.

The key-note of the partial solution of this question may be found in a speech of President Harrison before the National Association of Teachers.

"It is quite as appropriate, I think, that the President of the United States should review the teachers of the land as that he should review its army or its militia. For, after all, the strength and defense of our institutions, not only in peace, but in war, is to be found in the young of the land who have received from the

*This essay received honorable mention in the competition for the year 1892.

lips of patriotic teachers the story of the sacrifice which our fathers recorded to establish our civil institutions, and which their sons have repeated on hundreds of battle-fields. The organized army of the United States, if we include the militia of the states, is of insignificant proportion when put in contrast with the armies of the other great powers of the world. Our strength is not in these; it is in the great reserve to be found in the instructed young of our land, who come to its defense in the time of peril. It was not of the brawlers, it was not of the frequenters of the tavern, of which our army in the Civil War was made or of which our army must be made if any great emergency of war again confronts us."

We must commence with our youths in their school days; but patriotism and intelligence will not alone suffice to conquer foes. Some military training must be coupled with them. At no time can this latter be given to better advantage than in the schools, during boyhood. No time is lost from the pursuits of manhood. The mind is then flexible and receptive. Boys naturally delight in military training. The military training will be felt advantageously in their civil pursuits, not alone in their habits of obedience, self-denial and promptness, but in improved executive ability and physique. The military training at the schools should embody a certain amount of calisthenic exercises. The improvement of the physique of the growing generations is a necessary supplement to the military training. The military calling demands good physiques, more than ever. The pursuits of peace will be more vigorously pushed by a nation of virile, soldierly men, than by a haphazard nation of round-shouldered, weak-chested men.

This military training should be provided for by legislation of the state and general governments. The state authorities should make attendance upon military training compulsory upon all boys in the public schools. Private schools should also be compelled to provide military instruction for the boys. No boys should be exempt except upon certificate of a duly appointed examining surgeon. Boys under 10 years should be drilled without rifles, and care should be taken that no boys be obliged to drill with rifles who may be injured thereby. The general government should provide arms, equipments, and some of the instructors. Specially made light rifles should be provided for the use of the smaller boys.

An army officer to superintend the military instruction should

be detailed for each state under the direction of its governor. A commissioned officer is to be detailed to take charge of the instruction in cities having from 50,000 inhabitants and upward. Non-commissioned officers might be detailed for towns having between 8000 and 50,000 inhabitants.* Where retired officers and non-commissioned officers are competent to perform this work they may be detailed, receiving full pay whilst performing the work. Any extra compensation of instructors should be borne by the state and municipal authorities. The United States officials should only be detailed for this work with the approval or request of the state and municipal authorities concerned.

Interest and emulation in this work should be created by competitive drills, both for individuals and organizations. Each town should provide medals for individual competition, and a flag to be held by the best company or school organization, competitions taking place semi-annually. The state should provide a flag to be competed for annually. The United States should also provide flags to be competed for annually, within each state.

To avoid the expense and trouble of bringing together annually companies from the entire state, a board of officers could be present at drills in each town. The five best companies could then be assembled at some central point for a final competition before the same board for the award of the colors, which should only be held by the victors for the ensuing year.

The interest in the military instruction will be enhanced by adding instruction in standing gun drill and signalling, for the older boys. Both of these are easily learnt and enjoyed by boys, particularly the signalling.

Instruction in aiming and firing small-arms should also be given. Shooting galleries wherein air pistols, air guns and calibre 22 rifles could be practiced with, under supervision, should be provided. Only the more careful and older boys should be admitted to this practice. Many timid parents will object to this work and boys should only be permitted to take it up upon filing written consent of parents. But the American youth is usually permitted to handle fire-arms at an early age and this familiarity tends to reduce, rather than increase accidents.

*The United States contain 57 cities having more than 50,000 inhabitants and 386 towns with 8000 or more, and less than 50,000 inhabitants each.—Census 1890.

Prizes for competition in marksmanship should also be given by the municipal, state and United states authorities.

Annual summer encampment would be enjoyed by boys, particularly if regions are chosen where opportunities are afforded for hunting and fishing, as well as military manœuvring. The attendance should be voluntary and the expense borne by the state. The expense would not be great and it would make possible to many the pleasures of hunting and fishing and out-of-door life under favorable conditions, otherwise unattainable.

The establishment of military instruction in the schools has precedents, both in local and general government legislation. Many years experience of military instruction of the public schools of Boston, have shown it to be both feasible and desirable. It is highly prized by teachers, parents and boys. It is given countenance in every way by both the municipal and state authorities, who show their interest by personal attendance at various public drills and competitions.* There is no reason why this should not be done throughout the United States and the interest therein stimulated by its officials. The little time taken from sedentary pursuits of study will be more than repaid by enhancing physical vigor, bringing with it enhanced mental vigor. Given to understand that they are being prepared to perform efficiently an important duty, our youth will actively imbibe and maintain the idea that the citizen's first thought should be the public welfare, ready to sustain it with his life, if need be.

The military training received during school days will make the citizen more quickly an efficient soldier, although the details of tactics may have changed when, in later years, he is called upon to serve.

By the census of 1890 we find that the total number of pupils in the elementary and secondary public schools is 12,682,577 and the total number in private and parochial elementary and secondary schools is 1,301,623, making a total of 13,984,200. The statistics show that the number of boys is very slightly in excess of 50 per cent. This will give us in round numbers at least 7,000,000 boys attending schools. The number of males in the United States between the ages of 5 and 17 inclusive, is given at 9,358,198; and between 18 and 20 inclusive, is given at 1,884,502. The minimum age limits vary from 4 to 7, whilst the maximum

*Massachusetts shows in a practical way its belief in its motto, "By his sword he seeks the calm repose of liberty."

limit varies from 17 to 21. No data are at hand to determine the proportions of boys between 5 and 10, but it will be safe to assume 40 per cent., which will give 2,800,000 boys to be instructed in calisthenics and marching drill only, and 4,200,000 boys to receive full military instruction, with arms.

MILITARY INSTRUCTION IN COLLEGES.

In 1861, when the need was first seriously felt of educated men capable of officering our volunteer forces, Congress passed the act donating lands to aid institutions giving instruction in agriculture and mechanic arts. Coupled with this was a clause requiring that the institutions availing themselves of the act, should give instruction in military tactics.

Further legislation authorized the issue of arms and equipments to these schools, and also the detail of officers as professors of military science and tactics. The demand for officers to give military instruction has been so great that Congress has increased the number detailable from 20 to 75. The utility of this work has been so fully recognized that whereas in 1888 the number of officers who could be detailed was increased by act of Congress to 50, only three years thereafter, in 1891, the act was amended to increase the number to 75. The work has been carried on successfully and the benefits of it are shown in many ways, not the least of which is that a large number of the graduates of these schools have become efficient officers of the National Guard and aided materially in the marked improvement of the latter.

The instruction was for many years allowed to shift for itself and it is only in recent years that the War Department has taken an active interest in its supervision. In many of the institutions the Faculty allowed to the military instruction only the minimum of time which gave the semblance of complying with the law. It rested with the views and knowledge of the officer detailed whether the instruction given was of a character to repay the United States for his services and the use of arms and equipment loaned. Very often the chief object that the institutions had in view was to get a professor or instructor in some other study at a reduced compensation. The officers detailed to give military instruction were given a small salary from the college, to give instruction in other studies, and not infrequently this was done to the detriment and neglect of their military work.

Even when a due amount of time was allotted for military work, it was utilized either in the direction of drill, or in giving lectures on military history and grand strategy and tactics. In other words, efforts were expended in making of these students either drill-sergeants or general officers. What we chiefly needed during the war, and what we shall again require, is a large number of intelligent men to fill the grades of captains and lieutenants. Although it is desirable for men filling these grades to understand how to drill troops, it is still more important that they should have some knowledge of feeding, clothing, camping and marching troops, as also the general principles of military sanitation. It was the lack of such knowledge which cost the nation so many lives from preventable hardships and disease. The loss of lives in our war from disease was almost exactly twice as great as that due to the weapons of the enemy.* This is true in all wars, but the disproportion is greatest where the troops are largely volunteers. During our Civil War, the mortality rate from disease compared to violent deaths amongst the white volunteers was in the ratio of 7 to 4, whilst that of the colored troops was 9 to 1. Amongst the regulars it was only in the ratio of 9 to 8. During the Mexican War, the regulars lost 10 per cent. by disease and 3.25 per cent. by violent deaths. The volunteers lost 10.5 per cent. by disease, (including those who died en route home) and less than 1 per cent. by violent deaths. The ratio of losses by disease to losses by violent deaths was, with the regulars 3 to 1, and with the volunteers more than 5 to 1, actually occurring in Mexico; and, including those who died en route home after discharge for disability, it was nearly 12 to 1. The regular troops were better able to take care of themselves under the abnormal conditions of service in the field. It was notable also that the volunteer organization, commanded by regular officers, almost invariably lost less in available strength from disease, than other volunteers.

Instruction in colleges might also be given in guard and outpost duty, reconnaissance work, elements of hasty intrenchment, methods of acquiring rations and equipments of various kinds and how accounted for, and outlines of procedure of courts-martial, including the examination of witnesses.

Although the students may not be able to memorize all of

*The deaths from disease were 186,216, whilst the deaths from the weapons of the enemy were 93,960—Report of Surgeon-General.

the instruction given in the short time that can be usually devoted to these subjects, enough will be done to insure their knowing just what subjects it will be necessary for them to consider and study up when called upon to serve as officers. Such knowledge, if forgotten, will be relearnt more quickly than if without this previous instruction.

Much would be gained to insure uniformity and efficiency of instruction, if a text-book were prepared under the auspices of the War Department, embodying briefly the outlines of the subjects which have been indicated to be desirable to study. No such book has yet been prepared. To recapitulate, the subjects would be:

Organization and Discipline of Troops. Military Sanitation (including Feeding troops,—constituents of nutrition,—components of ration and how prepared). Clothing troops. Camping troops. Marching troops. Acquirement of public property and manner of accounting. Outlines of procedures of Military Courts. Hasty Intrenchments. Outpost and Guard Duties. Reconnaissances.

Such a work would also be of great value to the National Guard organizations and to new levies of troops whenever necessary to be raised.

There are more than 100,000 male students in our colleges and technical schools. At least 15,000 of these graduate annually. So large a body of men who have received higher education cannot but have an important influence in any armies which we may be called upon to raise. Their instruction in military matters as outlined will greatly enhance their value in increasing the effectiveness of the troops which they will naturally be called upon to officer. Only about 6500 of the 15,000 students of colleges where officers are detailed receive military instruction at the present time, and efforts should be made to extend it to all if possible.

The time devoted to the military instruction at the colleges is frequently given most grudgingly, both by students and faculty. This would hardly be if they were imbued with the idea that the citizen owes it to himself and to his country to be prepared to serve it efficiently in times of danger. As much of the instruction is in the direction of saving life, rather than in destroying it, even those who are opposed to wars should willingly accept it. An average of three hours per week, the time now prescribed

by the War Department, is very little to devote to this work, and yet, if faithfully taken, much benefit may be derived from it.

It might be well to point out that much of the information given as to the care of troops is also applicable to the pursuits of peace, when as civil or mining engineers they are in charge of large bodies of workmen. Keeping them in good health, they will be able to make them more productive in their work.

The annual publication in the Army Register of the names of those graduates of colleges standing highest in the military department, was a step in the right direction in officially recognizing the work done. It would be beneficial both to the interest of the military instruction at the colleges and directly to the army, if at least five of the graduates of these colleges were assured annually of commissions in the army. The selection should be made by competitive examinations. The very best men would seek for these appointments and the army would obtain annually an infusion of new blood with a culture different from that received from the Military Academy. Admirable as is the curriculum and training which the graduates at the Academy receive, they would be benefitted as much by direct contact and intercourse with the graduates of the civil schools as would the latter by contact with the *élèves* of our military school. The service would be benefitted in both directions.

THE MILITARY ACADEMY.

The Military Academy at West Point is the fountain-head from which our armies have received their character. Compared to the primary military schools of European nations, it stands easily first, both in extent of its curriculum and thoroughness of its physical and mental training, as well as discipline. It is the centre of the extremely conservative tendencies of our army, and all efforts to change the methods that have been in vogue are strenuously resisted. Yet many changes might be made with advantage to the army.

The curriculum, in common with that of many civil institutions of learning, presents the spectacle of endeavoring to crowd a gallon into a quart measure. Too much is attempted for the four years allotted to the work, and yet there are doubtless additional studies that might be advantageously introduced, if time permitted. A year might be added to the course with advantage. This has been recognized and was attempted just before

the war. The urgent need of officers when the Civil War broke out, led to a return to the four-year term, and no effort has been made since to again lengthen it, although sometimes recommended by boards of visitors.

Besides lengthening it, other changes may be made which will tend to a better utilization of the allotted time. A large proportion of the cadets could pass a higher grade of entrance examination and gain time for additional studies. There are, however, many who have not had the best educational advantages but who frequently turn out to be the most able of our officers. To provide for such cases it would be well to have two grades of entrance examination, one of a somewhat higher standard than at present, and one about the same or even less exacting. Those who pass the higher grade examination are to be admitted at once into the fourth class. The others are to be given a one-year preparatory course at the Academy. It would require but three or four additional instructors and would save to the army some of the most valuable material. This would often be lost to it because of the shortcomings of educational advantages of the frontier and backwoods. There would also be a gain in the ability to advance somewhat the course of studies of the fourth class.

The verdict of the present age is that the best work in any direction can only be done by specialists. The proverb "Jack of all trades, master of none," is generally concurred in. The present course of studies at the Military Academy apparently aims to produce "Jacks of all trades."

The curriculum at the Military Academy is practically the same for all, although modified for different sections. The graduates will be assigned to arms of service differing as largely in their requirements as do Cavalry, Infantry, Artillery and Engineers. Many cadets must fritter away their energies and time on studies for which they have neither taste nor aptitude, and which will be of little direct use to them. Might not these students accomplish more for the time and energy expended, if these were directed in lines for which they have more aptitude and which would be of more use in the arms of service to which they are likely to be assigned?

In most colleges and technical schools the students are permitted to select their courses at the end of the first and second year. In the technical schools the studies allotted vary according to the professions which the student chooses to prepare for.

Could not this be done to some extent at the Military Academy, at the end of the second year? By this time most cadets will have shown to the Academic Board what branches of service they will be likely to be adapted for and the assignment of studies be made accordingly. They will no longer be placed on a Procrustean bed, to be, in some instances stretched and in other cases trimmed off, in order to fit it.

With the changes indicated, may it not be possible to introduce into the curriculum the study of military sanitation and hygiene and of German? The importance of military sanitation has already been spoken of. The knowledge of this has not been acquired heretofore until after leaving the Military Academy. Not infrequently this has been learnt only at the cost of many lives which might have been saved, had the young officers received this instruction before being placed in charge of troops. As so much of the best military literature is published in German, the study of that language would open to the graduates an important additional field for study of the profession.

One of the greatest needs of the country in case of war will be instructed officers. The Military Academy has a capacity to educate a much larger number of cadets than it receives at present. It would be well if this were taken advantage of, at least to the extent of an appointment by each Senator, and increasing the Presidential appointments to ten annually. This would make an increase of the corps of 128. Recommendations to this effect have been repeatedly made and should be adopted if any attempt is to be made to seriously prepare the country for emergencies.

It could be clearly understood that where the number graduating is in excess of the requirements of the army, those graduating lowest are not to receive commissions.

The appointments to the Military Academy are eagerly sought for, and many parents would gladly pay for the privilege of having their sons educated at West Point. The school could, without many changes or additions, accommodate and educate 700 cadets; 200 more cadets might be admitted who pay for their tuition and support, it being distinctly understood that these have no claim to commissions upon graduation. It should also be stipulated that after graduation they are to be actively connected with organizations of the National Guard for a period of at least five years.

STRENGTH OF GERMAN AND FRENCH ARMIES.

It may be well to examine the numbers which may be brought into the field by European nations in order to realize something of the possibilities of modern wars. Germany and France are taken as exemplifying the vigorous demands made upon the people. The following tables are extracted from tables prepared by Lieutenant Wm. R. Hamilton, 5th United States Artillery, being compiled by him from the records of our War Department. The active army represents the force which could be immediately mobilized for field service:

	GERMANY.	FRANCE.
Peace Establishment,	499,862	528,114
Active Army.		
Combatants	810,004	1,125,258
Non-combatants	272,520	242,464
Total	1,082,524	1,357,722
Field Reserve.		
Combatants	405,213	910,894
Non-combatants	3,671	46,500
Total	408,884	957,394
1st Reserve	900,200	956,149
2d Reserve	798,182	1,177,171
Totals.		
Combatants	2,913,599	4,169,472
Non-combatants	276,191	288,964
Grand Total	3,189,790	4,458,436
Population	49,421,064	38,218,900
Percentage of Army to Population	6.5	10.9

POSSIBLE STRENGTH OF THE NATION.

It is difficult to realize that the above can represent the actual relation of the armed forces which these two nations can muster, bearing in mind the greater population of Germany. Assuming that the numbers for Germany represent the maximum of able-bodied men that can be mustered in any nation, the United States with its 62,622,250 inhabitants should have 4,070,477 able-bodied men available to take the field. If taken on the basis of French armies we would have 6,832,087. Considering the increase of population which is constantly taking place and what we have

actually raised on both the sides during our Civil War, we can count on raising easily, at least 4,000,000 soldiers.* Dividing these into an active army, 1st, 2d and 3d reserves in the ratio of the German armies, we would obtain:

Active Army	1,360 000
1st Reserve	520,000
2d Reserve	1,120,000
3d Reserve	1,000,000
	4,000,000

This would hardly represent the maximum strength of the nation in a purely defensive war. In estimating the maximum war strength of European nations, 25 per cent. of the total population is taken. On this basis we have a strength available of more than 16,000,000. It should not, therefore, be difficult for us to place in the field 4,000,000 effective men.

METHOD OF RAISING ARMIES.

By legislative enactment in 1792 all able-bodied citizens between the ages of 18 and 45 were enrolled in the militia of the country. They were required to be provided with various obsolete weapons and equipment. This has been amended very little since, and such as they are, the laws have been practically obsolete. The equipment was so incomplete, the annual training so farcical, that the country derived little good from it, either in the war of 1812 or the succeeding Mexican and Civil wars. No use was made of the powers of conscription on the part of the North until the last years of the Civil War.

The standing army is so small a number that it is hardly worth considering at the present moment. But it is very desirable to formulate a scheme by which the great potential force of the nation may be quickly evoked. Our first and main dependence when in danger will be the volunteers, and we can count on these being sufficient to meet the requirements of the active army and even of the different reserves. But it will be well to provide for the general military enrollment of the people and subdividing it into the various classes. The machinery for its construction,

* The numbers raised for the North during the Civil War, when reduced to a basis of three years' enlistment amounted to 2,326,168. The number of men brought into the field by the Confederates is estimated at 1,250,000. Thus both combatants mustered about 3,576,168. The population of the United States for the census of 1860 was only 31,443,321.

arming and equipping, must also be provided. Conscription with us will only be resorted to when volunteering ceases to suffice.

The country must be subdivided into military districts. It is best to make these coincide with some existing political subdivisions, and we have presented a convenient one in the congressional district which now has a population of 173,901 and which in 1900 will easily be about 200,000. On a basis of slightly over 6 per cent. each district should be capable of supplying a force of 12,000 men. The 356 congressional districts would thus give 4,272,000 men. The enrollment being for the United States it would appear proper that the regulations, enrollment and levying, be made by officers of the central government. This may be construed as infringing on the prerogative of the state. But its machinery will not be brought into play until appeals to the governors of states for volunteers have failed. Retired army officers could be detailed to perform the duties involved in enrolling, classifying and exempting, being assisted by the local machinery for the registration of votes. Where questions of physical disability arise, duly appointed surgeons will have to assist the enrolling officer. It will be well to start on the assumption of all men being physically able to perform military duties. Those considering themselves disqualified must present themselves for surgical examination, or when not able to attend in person, notify the examining officer in order that he may make the necessary examination.

The classes exempted on account of vocation or family ties should be clearly defined. The physical deficiencies should be so classified as to exempt all cases worthy of it. Many men are physically fitted to perform garrison duty who could not take the field. In European armies we find, in the active army which is supposed to take the field, from 20 to 33 per cent. enumerated as non-combatants. The census of the United States for 1890 gives as the total number of males of the military age, from 18 to 44 inclusive, 13,230,168; 10,424,086 of these are native born, and 2,806,082 are of foreign birth.

Military enrollment should be a prerequisite of the right to vote. The enrollment lists should embody the entire voting male population, giving the age, class, and, if exempt, the cause thereof.

The various calls for troops should be made, as heretofore, upon the governors of states, who should endeavor to fill them

by volunteers. Failing to obtain them in this way, the conscription machinery should be brought into play. The experiences of our Civil War should indicate the advisability of making preparatory calls for troops, two or three months in advance of their being actually required. At these preparatory calls volunteers should be taken, and whilst the new men could be permitted to remain at their homes, they should be placed under military instruction, for, at least, one hour daily, at such times as to interfere least with their regular vocation. During this preparatory period these volunteers should receive at least one-quarter pay to compensate them for the trouble and degree of liberty surrendered in the enlistment. Conscriptions, when found necessary, should also be made in advance of the actual needs, in order to give the conscripts a similar preliminary training before leaving their homes.

The policy followed during the Civil War, of continually raising new regiments, instead of filling up those already in service, was shown to be detrimental, both in leaving an unnecessarily large proportion of officers to enlisted men, and in the increased time required to attain efficiency. Recruits, when incorporated into old organizations having veteran officers, are instructed and become fully fitted for efficient service more quickly than when organized into new regiments. It would therefore be better to assign new levies to the old regiments. New regiments should be formed charily only when the levies are largely beyond the numbers required to fill the existing regiments to a maximum.

It would probably be desirable to assign to each military district, for recruitment, certain regiments which are to be kept full as far as practicable from its levies. The military instruction given in the schools and colleges will very much shorten the time needed for converting the recruit into a serviceable soldier. But 2,806,082 of those of military age of our population are of foreign birth. Many of these will not have passed through our public schools and received therein the military instruction. They should therefore show at least one year's service in some National Guard organization, before being qualified for naturalization.

NATIONAL GUARD.

The existence of an organized and uniformed volunteer militia is due to the public spirit and natural martial characteristics of our

people. Working until recently under great difficulties, without much recognition, either from the general or state governments, they have, by persistent and united work, succeeded in obtaining a small measure of recognition. The support received from the individual states has paid only a moiety of the expenses.

The United States appropriated $200,000 annually when the population was about 7,000,000. In 1887 this was increased to only $400,000, the population being about 60,000,000. If the increase were made in proportion to the increase of population of the country, this amount should have been $1,800,000 in 1890. This amount is none too large in order to give the full support to the volunteer militia that they deserve. As the present number of the uniformed militia of the States amounts to 111,292, this allotment would make only $16.17 per man annually instead of $3.60.* At best, the individual members of the National Guard must make such considerable personal sacrifices of both time and comfort that the public should defray all necessary expenses. The organized militia has very properly been designated in many states as the "National Guard," and will be so called in this paper.

The advantages of effective state troops has been recently shown in widely separated portions of the United States. With constant increase of population there is a constant increase of the dangerous classes which the ordinary police forces are, at times, unable to cope with. It is, therefore, the best of policy for the state authorities to support liberally an effective National Guard force, as a reinforcement to the regular civil authorities, in times of unusual excitement and disturbance. The general government derives advantage in having ready an effective force which can be used in the first line whenever the country may be involved in war. With both state and general government interested in the maintenance of an effective National Guard, the question arises as to the degree of support which each should give. A fair division would appear to be made where the states provide armories, clothing, pay and food, when performing duties for the state, whilst the United States provide arms, equipments, tents and other camp equipage, as also the ammunition required for prescribed target practice. As soon as the state troops are called into the service of the United States, the latter assumes their pay and maintenance.

* The Naval Reserve, numbering only 1147 men, receives from Congress an annual appropriation of $25,000, making $22.67 per man.

Recent years have shown a marked change in the relations of the Regular Army and militia forces of the country. These were looked upon with indifference by the army because of the apparent lack of earnestness in their work, the "fuss and feather" element appearing to preponderate. With the disappearance of this element and the evidence given of real earnestness and thoroughness of work, the disposition of the army has changed towards the National Guard. The War Department has taken fuller cognizance of it, the officers have been freely detailed to assist in instruction and to make inspections of the National Guard. Its members have shown themselves eager to profit by the suggestions made by regular officers. As forming an important part of the first line to take the field, it is a patriotic duty for all officers of the regular army to aid to the utmost in its improvement. Looked at simply from a professional point of view, it is to the interest of officers of the Regular Army to aid the National Guard in every way possible. In case of war their own success may depend upon the effectiveness of these, forming, as they probably will, their principal assistants. A bureau of the War Department should be formed charged with the supervision of the National Guard, and officers detailed for the instruction of the National Guard of each state under the directions of its governor.

One of the weakest points in the system of our National Guard lies in the elective method of appointment of its officers. The disadvantages of this method are somewhat neutralized in some of the states by the fact that the officers are subject to a rigid examination and the tenure of office is during good behavior. In some states, officers must be reëlected every two years; this cannot but result disastrously. Tenure of office should be during good behavior throughout, and the examinations both on first appointment and promotion should be very thorough.

Many commissioned and non-commissioned officers of the National Guard enter into their work enthusiastically and devote much time and money to it. These would gladly take a course of practical instruction under competent instructors if opportunities were afforded them. The tendency is to distribute the regiments of the Regular Army so as to have one in each state, establishing them in regimental cantonments. These regimental posts might advantageously be used as schools of instruction for the National Guard.

Courses of practical instruction of three months for non-com-

missioned officers could be given during the summer months. They could then be easily quartered in tents. This course should embody practical work in drill, guard duty, signalling, drawing and preparation of rations, preparation of morning reports and the books which are necessary in the administration of a company.

Short and long courses for commissioned officers could also be established. The short course of three months would be the same as that outlined for the non-commissioned officers. Opportunities should be given them to act as sergeants and officers of the post guard.

Where they can remain to take a course of one year, the course of instruction should embody the course of military instruction already outlined as desirable for the students of colleges. During the last six months they should be called upon to perform duties as officers of the guard and sit on general courts-martial. For this last purpose they should be considered as being in the United States service. During this last six months they should receive pay of at least $75 to aid in paying current expenses.

The permission to enter these schools is to be granted by the War Department upon the application of the governors of states. The commanding officers of the regiment to which they are assigned should have authority to relieve men for incompetency or misbehavior. The commissioned officers under instruction should have no right of command except when taking the annual course, and then only during the last six months, being, however, junior to all regular commissioned officers.

Upon completion of their course by successful examination, they should receive certificates. To give these practical value, arrangements should be made by state legislation that the holders of the certificates of these schools need not pass further examination within three years of receiving them, either for new commissions or for promotion. Examination Boards should be convened annually both for the examination of new candidates and for those who having held certificates for three years, desire to renew them.

These certificates should be graded, considering mental, physical and moral qualifications. Those who receive the highest grade of certificate should be carried on a War Department list. They should be eligible to appointments as officers of United States volunteers to fill regular regiments in case of war, in a manner to be indicated hereafter.

The National Guard should conform in details of organization to the Regular Army. It is desirable to make this voluntary service as attractive as possible to young men. Showy military uniforms form one of the principal elements of attraction. Much latitude should be given in the choice of the parade uniforms, whilst insisting upon the campaign uniform conforming to that of the Regular Army.

A large proportion of the National Guard organizations are lacking in field equipments, and even in such an important article of clothing as the overcoat.

They should be provided with a complete camp equipage to enable them to take the field upon short notice. If this is kept in a central arsenal (as in some states) for all the troops, there are likely to be mistakes and delays in the issue. It should, therefore, be kept in the regimental armories. Frequent inspections should be made to insure its being kept in order. Where it is not possible to provide regular tents they should have at least the shelter tent and the rubber blanket. Troops simply armed and partially clothed are not by any means ready for immediate service. They must be fully clothed, including overcoats and blankets. They must have cooking utensils and tents, as also axes, spades and picks at hand, ready to be moved with the troops when ordered on duty away from their homes.

RIFLE PRACTICE FOR THE PEOPLE.

The marksmanship of the American rifleman in the wars of the Revolution and 1812 made the otherwise untrained levies formidable to the trained troops of Great Britain, and was an important factor in securing the independence of the United States. The familiarity with arms and ability to use them effectively was the outcome of the constant hostilities with the Indians, and having to derive much of their food by the chase. This familiarity with the use of arms no longer holds good with a large proportion of our population. In the Regular Army but little attention was paid to marksmanship, as it is known to-day. We went through the great Civil War without much improvement in that direction.

To the shame, be it said, of those whom the country paid to devote their time to the profession of arms, little advance was made by the Regular Army, in rifle practice. To a few enthusiasts who formed the National Rifle Association of America we are indebted to great advances in marksmanship and improvements

of small arms and ammunition. Their success in competitions with the marksmen of Great Britain created a wide-spread interest in rifle practice, and rifle associations were formed in every part of the country. Rifle ranges were established by them. The annual matches at Creedmoor were participated in by representatives from every part of the Union. Finally the Regular Army sent its teams to compete. Defeated at first, the interest in marksmanship was stimulated until a system of rifle practice was evolved which produced excellent marksmen. The team from the Regular Army were able sometimes to carry off victoriously the trophies competed for by teams of the National Guard from many States.

Many National Guard organizations throughout the country have developed a large proportion of excellent shots. The familiarity with the use of their arms and the confidence derived from the knowledge that they could hit, even at long ranges, has greatly enhanced their value as soldiers. The value of the increased effectiveness which both the Regular Army and National Guard derived from these improvements, can hardly be overestimated. It is well within the mark to say that the National Rifle Association of America has added, by its work, to the defensive capabilities of the country, more than the equivalent of an entire army corps to its regular army.

The general interest of the people in rifle practice has gradually lessened and it has been maintained only in the Regular Army and National Guard, and even in these it has diminished. It is desirable to re-create the popular interest, and maintain it. As the defense of the nation is to be made by the people, it is desirable to make them proficient as marksmen. The apathy in this direction in the United States is more marked when contrasted with the continued interest of the people and authorities of Great Britain. Much is made there of the annual competitions, and valuable prizes are offered by the Queen and other notables of the nation. Members of the royal family show their interest in this element of national defense by their presence at the competitions. Excellence in marksmanship with the rifle, amongst the people, is now recognized to be necessary for the nation as had been the excellence in the use of the longbow, to which England owed so many victories. The general government should establish at least one rifle range in each state and this should be supplemented with additional ones provided by the states and municipalities. Valuable prizes, both in the form of trophies and

money, should be provided by both the national and local authorities. The President and governors of states might well add to the interest of the competitions by their presence at the more important annual matches.

To meet the requirements of the modern rifle the ranges should be large enough to include distances up to at least 2500 yards, whenever it is possible to obtain them. They should be so situated as to avoid any possibility of danger to the neighboring inhabitants. Although this limitation will make it somewhat difficult to locate them in populous districts, there are few where it may not be done. The value of real estate is continually increasing with the increase of population. The increase of the latter is very rapid. The establishment of rifle ranges should be considered one of the prime necessaries for the public defense, and immediate steps taken to provide them. After the rifle ranges are established, the annual cost for their maintenance and for the prizes to be offered, would be a bagatelle compared to the value to the nation. The United States could well afford to make annual appropriations for prizes, of not less than $1000 for each state competition, and $10,000 for a bi-annual general competition, where teams from the Regular Army, National Guard and Rifle Associations could meet in friendly rivalry. The competitions should include firing at moving targets and skirmish firing at unknown distances. Matches for mounted men firing whilst at rest and in motion, as also pistol practice on foot and mounted might be added.

LIGHT ARTILLERY AND CAVALRY OF THE NATIONAL GUARD.

Light artillery will play a more important rôle than ever in future battles.* Good light artillery cannot be improvised or prepared as rapidly as in the case of infantry. There are only 10 light batteries in the Regular Army. In case of foreign war, the mass of the regular artillery would be necessarily retained as garrison artillery at the sea-coast. A very large number of volunteer light batteries would have to be raised. The National Guard is

* The extent to which artillery will be used in future wars is indicated by the numbers which France and Germany are prepared to put into the field.

	GERMANY.	FRANCE.
Active Army	2,220 guns.	2,284 guns.
Field Reserve	924 "	1,788 "
	3,144 "	4,072 "

lacking in well-equipped light batteries. This is due both to the great cost of the guns, carriages, harness and equipment, and the difficulty of getting suitable horses at all times. Light batteries are not of as much immediate use to the state authorities for the suppression of riots as are infantry. As they are expensive to equip and maintain, there is a reluctance to organize them. Efforts should be made to lighten the burden as much as possible and induce the state authorities to increase the number of light batteries. The cost of a light battery of four guns, with its carriages, wagons and equipments, is about $11,000. This is prohibitory, particularly in the smaller states where the allotments of several years would be required to pay for the armament of a single light battery. It is in some of the less populous states that light batteries are more likely to be formed on account of attractiveness of that arm and the small number of men required to make a unit organization. Horses, too, are more likely to be easily obtained. The United States should loan the guns and carriages without charging them to the limited annual allotment, charging only for the harness and perishable parts. If this cannot be done and legislation cannot be secured, then may it not be possible to distribute the charges for light battery outfits over a number of years?

The cavalry of the National Guard are also too few in numbers, owing to the additional cost of equipments and the expense involved in horse hire. Efforts should be made to increase the number of cavalry organizations, especially in the states where horses abound and the people are naturally good riders. The southern and western states could most readily increase the number of their cavalry. Texas, abounding in horses and horsemen, has only 115 in its National Guard of 2207; Kentucky, noted for its horses and riders, has a National Guard numbering 1199, and of this number there is not a single cavalryman. South Carolina, on the other hand, has a cavalry force of 1269 in a total of 5213.

NATIONAL GUARD SEA-COAST ARTILLERY.

The United States has a frontier of sea-coast and great lakes of not far from 7000 miles. Its shores are bordered by populous and wealthy cities. The artillery of the Regular Army is insufficient to man the fortifications and would require assistance. The National Guard has but few organizations instructed in artillery,

and yet, in case of foreign war, we should first need large numbers of artillery troops. It is necessary to create in all states bordering on the sea-coast and great lakes, heavy artillery organizations. These organizations should be instructed in the fortifications, and, as far as practicable, at the guns which they would have to man.

They should be given instruction by the regular garrison artillery at specified times. Preliminary instruction in the use of various instruments, and lectures outlining the principles involved in artillery work could be given in the armories. They should be notified of the times of the target practice of the regular artillery, so that its members may attend and profit by the experience. They should also annually occupy the forts to which they would be assigned, for a period of from ten days to two weeks. A liberal allowance of ammunition should be issued for practice with the guns, at both stationary and moving targets. Prizes should be offered, for which both Regulars and National Guard should compete.

Nothing is so discouraging to the artilleryman as to manipulate guns month after month without actually firing them at targets. The ammunition for the larger nature of guns is very expensive and but a few rounds could be fired annually. But by using 3 lbs. and 6 lbs. sub-calibre tubes, a great deal of interesting practice may be obtained with only a moderate expense. These are used in foreign service but have not, as yet, been introduced into our own.

The nature of the work to be done demands intelligent men. Many men who are perfectly willing to serve in the defense of their own homes are loth to place themselves so as to be liable to be ordered away to suppress riots, etc. The artillery organizations would be additionally attractive to married and business men if it were clearly understood that they are not to be ordered away from their own cities for the suppression of riots or the defense of other cities.

The experiment of the National Guardsmen serving the guns of the fortifications has already been tried in New York, Boston, San Francisco and New Orleans. The results have been encouraging, the National Guardsmen having shown a commendable aptitude and liking for the artillery work.

Another need for the National defense is a corps of volunteer submarine mining or torpedo corps. The placing of a system of

submarine torpedo defenses of harbors, requires skilled men, time and care. The work is of a character that cannot be done hurriedly. To be effective it must be done most carefully. The number of instructed men of the Regular Army, who are available for the work, is altogether too limited to ensure the necessary celerity, and additional trained men must be provided.

SUBMARINE MINING CORPS.

A volunteer submarine mining corps could be readily recruited amongst the numerous electricians, now to be found in all our large cities. They might be instructed in much of the work of planting individual ground and buoyant mines, as also grand groups, testing them after planting. This may be done without involving the disclosure of parts of the system which it is desired to maintain secret. They could also be instructed in the manipulation of various high explosives used. The practical knowledge of our torpedo system acquired by some of our skillful and ingenious electricians cannot but react beneficially by suggestions of improvements of its details which will aid in its perfection.

THE REGULAR ARMY.

The Regular Army of the United States has always been jealously retained at the minimum number consistent with the supposed wants of the nation. The purposes of its existence are manifold, viz.:

1st. As a school of instruction in times of peace.

2d. To guard national fortifications and property.

3d. To protect the frontiers from the Indians and also protect the latter.

4th. To protect our long boundary lines, preventing any bodies of armed men levying war from our territory into that of Mexico or Canada.

5th. To serve as a police force in cases of extraordinary riots and disturbances, when the state authorities have failed to maintain the peace.

6th. To form the nucleus of the first line in case of war.

The present nominal number of 25,000 is too small to serve fully all the purposes. Nor is the organization such as to adapt itself to the needs of modern tactics.

The Regular Army has been so small that Indian outbreaks have necessitated the expenditure of large amounts of money for the transportation of troops from great distances. In order to

cope with them, it is a question whether it would not have been more economical to have maintained a larger force. The Mexican frontier has been guarded with the utmost difficulty owing to the scantiness of the forces, and distances to be protected. The chances of Indian outbreaks are being continually reduced, but as the country increases in population, there is more than a proportionate increase of the dangerous classes. The class of emigrants flocking to the United States has deteriorated, and has been found to contain a larger proportion of criminals and paupers than in the past. These cling to the cities, and are accumulating very fast. They are filled with ideas of socialism and anarchy. They affiliate to organizations already formed for the subversion of the existing order of things. They have in their number men of education and ability, whose organizing power and leadership increase their capability for evil. It is conceivable that formidable outbreaks may be planned and carried into execution simultaneously in different cities. These can be made of sufficient magnitude to paralyze the civil authorities and even to defy the state troops. The assistance of the general government will have to be invoked. The entire army will hardly suffice to cover more than a single large city. The present strength of 25,000 men has been arrived at arbitrarily and is the result of compromises between those of our legislators who are statesmen and those who, being politicians, only desire to pose to their constituents as economists. The true interests of the country are endangered by short-sighted, self-seeking demagogism.

It would appear that some definite policy should be adopted and the strength of the Regular Army fixed in accordance with some regular laws. The most natural limit would appear to be some fixed ratio to the census population. The numbers should be increased in this definite ratio at each census. Not alone should this change of strength be made to bear a definite ratio to the presumable numbers of the dangerous classes but so that it should bear a definite ratio to the war strength of the nation.

The question arises as to what this ratio should be. No considerable increase of the army will be sanctioned by Congress unless under the immediate stress of war. The present strength is conceded to be too small. It represents less than one soldier for each 2500 inhabitants. Let us fix the peace strength of the Regular Army at one enlisted soldier for each 2000 inhabitants or one-twentieth of one per cent. (0.05 per cent). Surely with this

proportion of regular soldiers to inhabitants inured to arms and having had military instruction, there can be no danger to the liberties of the country. In 1894 we should have a population of about 67,000,000. This gives us as the immediate strength of the Regular Army 33,500 enlisted men. In 1900, with a probable population of 75,000,000, this would give us 37,500, and in 1910, with a probable number of 90,000,000, only a force of 45,000 men: so small an increase will certainly not be too great for the needs of the country.

There are various factors to consider before determining as to the number of regiments of each arm of the service as well as the size of the companies. During both peace and war, a larger number of regular officers are required for duties which necessarily detach them from the troops. The details during time of peace are at present as follows:

Details at Colleges	75
Military Academy	42
Artillery School	9
Infantry and Cavalry School	5
Recruiting Service	78
Aides to General Officers	19
Acting Judge Advocates	5
Inspectors of Rifle practice	8
Inspectors of Artillery	3
Military attaches of Legation	3
Other duties	11
Total officers detached	258

If, in addition to this, regular provisions are made for the instruction of the public schools and National Guard, as well as for the Bureau of Military Information, and a Staff School, the following additional details will have to be made.

State supervisors of military instruction in public schools	44
Military instruction of public schools of large cities	60
Probable additional details to colleges	50
Instruction of National Guard (1 for each State)	44
Bureau of Military Information	15
Staff School	10
Military Attaches of Legation	10
	233

There are always some officers absent sick and on leave and allowance should be made for this. Two per cent. is not a large

estimate of these so absent. Based on the present number of officers this would give us 43. The absentees from duty with troops will then figure up as follows:

Details at present authorized	258
Additional details proposed	233
Number absent sick and on leave	43
	543

In case of war all of these additional officers will be required for additional battalions to be raised, to command volunteer organizations, to perform duties as general officers, assistant adjutant-generals, inspectors, chiefs of staffs and chiefs of artillery.

The troops should not be denuded of commissioned officers in order to furnish these details. There should be enough to suffice for the details and assure at least three officers with each company, if its instruction is to be vigorously pushed.

Instruction.—An army is maintained for the purpose of securing to the nation certain results. There is no reason why those naturally inefficient, and those who have become so by the laziness of their natures, should be maintained in it because of having once been appointed. Continued tenure of office should be the reward for continued and increasing efficiency. He who stands still in his mental development of acquirements *retrogrades;* for the rest of the military world moves on and he is left relatively behind. There is a tendency to decry the necessity of military studies. The good work done by so-called practical men is pointed to as showing the needlessness of being studious. But had these same practical men also had the advantages of military studies might they not have done much better? The skilled physician detects at a glance the diagnosis of a case because both of his studies and practical experience. He prescribes the remedy without delay. The skilled soldier will perceive at a glance the relation and effect of different positions of his own troops and of the enemy, and will direct the movements which will insure the greatest chance of success. The study of various situations and combinations of troops given in history, will aid him in forming a correct judgment on the spur of the moment. Practice in the numerous combinations of positions which may be educed through constant play of the Kriegspiel is of no mean assistance in forming this judgment.

The establishment of the regimental lyceums has been beneficial in stimulating the mental activity of the army. The neces-

sity for passing examinations for promotion, of officers of the line was of great benefit. The spur of necessity awoke many from the state of mental torpor, which they had fallen into from the preceding conditions.

To enable all officers to study their profession and keep in touch with its advances, the mental food should be supplied them. There should be established regimental libraries well equipped with reference works and the best of current military books. The best English, German, French, Italian and Spanish military periodicals should be supplied to the regimental libraries. Officers should be encouraged to make translations of those articles which appear to be of interest to our own service. Read at the regimental lyceums their discussion would be of value.

Staff School.—The superiority of the German armies in the past was due largely to the work done by its Great General Staff. This was and is to-day composed of selected officers, who, culled from many thousands, are, to the last degree, examples of "the survival of the fittest." It is deemed necessary that they should show themselves eminently practical as well as understanding thoroughly the theory of the art of war.

Before becoming permanently members of the Great General Staff, they are given opportunities for service with different arms. They thus get a working, practical knowledge of the possibilities and shortcomings of each. When called upon to utilize each or all of these arms, they are better able to so direct them as to get from each the full measures of its capabilities without endangering it by requiring too much. By these men, all the details of mobilization for different war contingencies are fully worked out; campaigns are planned and information regarding various theatres of war are collated. Without complete change of organization and methods we cannot well create a Great General Staff such as the German. We may obtain most of the substantial advantages by developing our Bureau of Military Information and establishing a Staff School.

There is an immense amount of work to be done in collecting information about our own country. Topographical maps on a large scale are needed of every section. Detailed information of the means of supply and of communication are needed. The plans of campaigns under different contingencies and different theatres of war should be ready at all times and constantly revised to provide for all new phases of the art of war. Information

should be collated from abroad regarding weapons and methods in use, terrain and statistics of armies and supplies in countries with which there is the least likelihood of our becoming involved.

Besides all this, the Bureau of Military Information may usefully publish much that will be instructive to the army without communicating anything that it may have received confidentially. It may also be made the medium of publishing the best of the essays prepared by officers, in the work of the lyceums, as also translations of noteworthy articles published abroad.

A large number of regular officers will be called upon, in case of war, to exercise much higher commands than they have been accustomed to. Many will become general officers. Many will be called to act as chiefs of staff, upon whom devolve all the details of orders for the movement of troops, and who in emergencies should be capable of issuing necessary orders in the event of sudden death or other cause of absence of the general. The instruction in strategy, grand and minor tactics and logistics given at the Military Academy, infantry, cavalry and the artillery schools, is necessarily primary in character and insufficient. A staff school, corresponding to the war academies and staff colleges of other nations should be formed, at which these and cognate subjects may be thoroughly taught. A course of not less than two years would be advisable. During this time parties should be sent during the summer to examine various probable theatres of war in the United States and formulate plans of campaign best suited to each region. Officers should only be detailed who have graduated from either of the Schools of Application at Willet's Point, Fort Monroe or Fort Leavenworth.

After graduating, the officers are to be assigned for duty for one year in each arm of service to which they do *not* belong. Details as military attachés of legation and in bureaus of military information at Washington should only be given to graduates of the staff school who have had also the details with the different arms of service. Where it is feasible, such graduates of the staff school should be selected for details with state, National Guards, colleges and schools. The avenue to all desirable details should be eventually through the various schools of application ending in the staff school. "Knowledge is power." More knowledge is more power, and it should be felt throughout the army that preferment and desirable details are given to those who have acquired theoretical knowledge and shown their ability to use it practi-

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cally. Desirable details should no longer be given to those only having either political or personal influences to aid them.

Promotion.

A reasonable flow of promotion is essential to the efficiency of an army if it is to be kept in a condition to take the field at short notice. The laws affecting it should be such as to avoid the glaring injustices and anomalies which exist at present.

In times of peace, deaths, resignations, and dismissals are too few to keep up the changes necessary to enable the young and active to arrive at positions of command and responsibility.

It would appear desirable to open avenues for promotion even in times of peace for distinguished merit, either by gallant acts or notable efficiency in service. The knowledge that one must "mark time" with all others in the line of promotions, without a chance of preferment, is not encouraging for zealous officers who see the drones passing along towards promotion with equal celerity and certainty. It is difficult to suggest any method of promotion by merit, which is not open to the dangers of undue favoritism and advance of those who happen to have personal or political influences to assist them. When, however, conspicuous acts of gallantry are performed, few officers will begrudge their juniors some promotion as a reward. Promotion, either in advance in numbers or in grade, might be given with the consent of three-fourths of the officers whom they will pass over. The nomination being made, a statement of the act or acts for which it is to be made is to be sent to all the officers concerned, who give or withhold their assent to the promotion. To make this unanimous would be apt to render this method of promotion nugatory, as there will always be a very few who cannot see any one pass them by merit or otherwise. Really meritorious actions will certainly command the cheerful acquiescence of three-fourths of the officers of a grade, who will be pleased to contribute their share of the rewards for gallant actions.

By making the examination for promotion more and more comprehensive and rigid as time progresses, the drones will either be spurred on to the more earnest study of their profession, or pay the penalty by dropping either behind the others after failure upon the first examination, or being retired upon a second failure. The army cannot afford to retain such on its active list.

Promotion might also be advantageously accelerated by per-

mitting voluntary retirements on half pay after twenty years' service. Many officers can see opportunities to take up some civil pursuits advantageously when not too far advanced in years. These should be deemed available for active service for at least 20 years after retirement or such lesser period as would have made their length of service 40 years had they remained on the active list. At the end of this period they are to receive three-fourths pay. These officers should be required to become actively connected with the National Guard of any state they may elect, within a period of two years from retirement and remain so connected for at least ten years.

Lieutenants of engineers and ordnance receive promotion to the rank of captain after 14 years' service. The rule is a good one and should be applied to lieutenants of the line. A grade of second captain similar to one found in foreign service could be established for these. As it is, there are lieutenants of the line of more than a quarter of a century's service as lieutenants, ranked by captains whom they instructed as cadets.

General Officers.

The army of the United States, even at its low strength of 25,000 men, represents a full *corps d'armée.* In European armies, a lieutenant-general commands a corps. Rank should be commensurate with responsibility. The command of our army is far more important than that of any army corps in existence. It involves the decision of a much wider range of questions and the responsibility and burdens are great. The rank and pay should be commensurate with this. The commanding general should be at least a lieutenant-general, and the pay and allowances ample to enable him to live suitably in the national capital.

In time of peace, the three great military divisions of the country appear to have been well taken in the military divisions of the Atlantic, Pacific and Missouri, although the latter might well be called the central division. Three major-generals are required for these.

The Division of the Atlantic with its complete system of railroads and telegraphs need not be subdivided. The central division, covering a much larger area of country and with lesser facilities as to railroad and telegraphs, and having still the possibilities of Indian and frontier troubles, might well be subdivided into four departments. The Division of the Pacific could be subdivided, as

at present, into two departments, one department being administered by the Division Commander. We have thus a necessity for six brigadier-generals of the line.

Staff Departments.

The so-called staff departments maintain a degree of independence of the commander of the army which appears incompatible with unity and vigor of action in times of emergency. They should be directly subordinate to and under the orders of the commanding general except in so far as pertains to the river and harbor work of the Corps of Engineers. The Adjutant-General's Corps should have three additional officers to take especial charge of the Bureau of Military Information, National Guard, and military instruction of colleges and public schools, as these duties are additions to the regular work of the corps in the past.

The efficiency of an army can only be maintained at a maximum by frequent, rigid, and fearless inspections. The corps of inspectors should be sufficiently large to permit of frequent and painstaking inspections. The present number is too small to do this, bearing in mind the widespread locations of our army and the additional work which should be done in the inspection of the military instruction of the schools and of the National Guard.

The Inspector General's corps should have enough members to fill the positions for all the military divisions and departments and in addition inspections for National Guard work and for military instruction of colleges and schools. In their number, there should be representatives of all arms and corps, including the Medical and Supply Corps. Allowing, besides, two at the War Department for special duties, we would have, including the Inspector-General, 15 officers instead of 7.

Our Quartermaster and Commissary Departments are abnormally large, considering the size of the army, but they were found necessary owing to its widely scattered condition. With the concentration which is now taking place, may not their number be materially reduced gradually, and the two corps be consolidated with the Pay Department under a single chief, as the "Supply Department"? The quartermaster and commissary work of most posts have been efficiently administered by lieutenants of the line, and there is no reason why this may not be done throughout the army. Specialists are only required for purchasing and depot

work and administration at headquarters of divisions and departments.

The pay of troops can be sent monthly or even weekly to either post quartermasters or company commanders, from division or department headquarters. There are very few places where advantageous arrangements for cashing checks cannot be made. Where officers of the Supply Department are placed on duty involving large disbursements, they should be bonded as are officers of the present Pay Department, and receive extra pay while performing such duties.

The duties of the Signal Department could be performed by a chief signal officer ranking as a colonel, four assistants ranking as majors, and nine captains. This would give three majors for the three divisions, seven captains for the seven departments, and two additional for other duties.

The Medical Department does not, at present, contain a sufficient number of doctors for all posts; but they may suffice when the number of posts are fully reduced.

Should it be considered advisable to establish the Supply Department, reductions in the number of officers now in the Quartermaster, Commissary and Pay Departments could be made gradually by not filling the vacancies in the lower grades.

There should be at least one chaplain for each regiment. Beside the spiritual comfort which many may derive from them, they can be given charge of the schools for enlisted men. It may, however, be advisable to change their assignments every five years.

Changes by orders and regulations, which have been gradually taking place, have withdrawn much of the power of initiative from subordinate commanders even in minor matters. All these, as well as more important affairs, must be referred to the War Department for final action. The latter is overwhelmed with a mass of petty details which lessen the opportunities for due attention to the more important questions. Affairs of the army sometimes lag in consequence. During times of peace the evil is but little felt. But an emergency of war, with its vast increase of the army, would bring with it a burden which would be unbearable; necessary progress would be impeded, causing disasters, and a change of system would be inevitable. Changes made in a system in the presence of an enemy are dangerous. Would it not be well to modify the system in times of peace so that it would serve equally well in time of war? Such a system should enable

subordinate commanders to finally dispose of many minor questions and authorize certain expenditures when coming within not too narrow limits.

The Line.—The present regimental organization of infantry of 10 companies is conceded not to be adapted to modern conditions. The new drill regulations provide for a regiment of 12 companies, subdivided into 3 battalions of 4 companies each. The battalion subdivision is a convenient arrangement for administration and for expansion as will be seen hereafter.

The tactical unit,—the company,—should be made as large as possible, both for economy of administration and efficiency of instruction. Men are absent on furlough and it is not always possible to obtain sufficient recruits to maintain the organizations full. The ordinary fatigue and guard details take away a very large proportion of the number of the small companies which have been the rule with us. Those remaining available for drills and other instruction are so few as to render the work almost farcical, if it were not so disheartening for captains of companies, and injurious to the interests of the service. It is better to have fewer but larger companies.

What has been said with reference to the necessity of having large companies of infantry applies with even greater force to light batteries. A company of infantry or troop of cavalry can drill fairly well with half of their number. But a light battery demands a certain minimum number if the battery drill is to be given in its entirety. As there are always men on guard, sick, absent, with and without leave, and in the guard-house, there should be at least 20% over and above the number required for fully manning a battery. A four-gun battery should not therefore have less than 84 enlisted men.

The commissioned officers of a company or troop should consist of one captain, one first and two second lieutenants.

There should be a supply and mess sergeant for each company of the line in addition to the other non-commissioned officers. The care and supervision of the company mess is too important to leave as a matter of daily detail to different non-commissioned officers. Constant vigilance is required to maintain it as it should be.

Cavalry.—The organization of cavalry should be essentially the same as the infantry, with the addition of a regimental veterinary surgeon ranking as a captain, a regimental saddler sergeant,

troop stable sergeant, and the farriers, blacksmiths and saddlers now forming a part of its complement. As cavalry is a special arm not existing in large numbers in the National Guard, it should be increased as far as practicable in order that we may have a large nucleus for its development in case of war.

Artillery.—The wealth on our maritime frontiers which an enemy may attack is continually increasing. The commerce, wealth and population on the shores of the Great Lakes have very little provision for their defense.* This is likewise the case in the great northwestern empire which is growing on the shores of Puget Sound. The present force of artillery is not alone insufficient to man the fortifications now in existence, but will be unable to care properly for the high power guns, their carriages and other paraphernalia of a modern artillery equipment.

At least, 80,000 men will be required to man our coast-line defenses. There should be a nucleus of at least one-tenth, 8000 men. We can, however, wait until the census of 1900 for the development up to this strength. But the present needs should cause an immediate increase to at least 5000 enlisted men. With the additional fortified positions of the Great Lakes and on the Pacific Coast, there should be two additional regiments of sea-coast artillery. These seven regiments should be organized on the same basis as the infantry, having 12 batteries, four of which are, for the present, to be skeletons, and the remaining eight are to be *foot* batteries.

The light batteries should be separated from the foot artillery. The service is entirely different, and better results will be obtained for both, by specializing them. In common with the other regiments they should have 12 batteries each, only 8 being manned and mounted. This will give only 16 batteries if two regiments are formed. At least one of these regiments should, in turn, be kept at a suitable point where the work of instruction can be carried on throughout the greater part of the year. This is very far from being the case at Fort Riley. Some point in Kentucky in the blue grass region would appear to be a more suitable climate.

There should be a chief of artillery stationed in Washington with the rank of brigadier-general, who should have an advisory supervision of both the sea-coast and light artillery regiments as

*The population of only five cities on the lakes is about 2,000,000 and their wealth is estimated at $3,500,000,000.

well as of the artillery school. Where the commanding general does not happen to have cognizance of the requirements of the artillery from direct personal experience, the needs of the artillery are apt to be overlooked, both as to its instruction and equipment. Its needs are manifold and, ur represented, there is a great chance of its being neglected. The experience of the not very distant past shows this. The entire control and decision as to the armament of our sea-coast has been left to the Engineer and Ordnance Departments. A businesslike view of the matter should indicate that the voice of the arm of service having practical experience in their use and which is to bear the brunt of the battle should be heard in determining the emplacements and the details of construction of the weapons and appliances which they are to use.

Officers of the line should form a part of all experimental boards and participate in the trials which lead up to fixing the details of weapons, appliances and equipments to be used. It must be acknowledged that this has been more and more the practice. But the principle should be firmly established and followed out in the case of all boards particularly the experimental ordnance boards. The manufacturing can remain completely with the Ordnance, where it belongs at present.

Engineers.—The special instruction of the battalion of the corps of engineers makes it a most valuable body. Not alone is it well instructed in the varied work of laying submarine mines, construction of field works, pontooning, reconnaissance work and map making, but it has shown itself just as available for the emergency duties of suppressing riots, etc., as troops of the line. It might advantageously be increased in number to a regiment of 1000 enlisted men, with additional officers for a 12-company organization. The river and harbor works have fully occupied the officers of the corps. With increased activity in the construction of fortifications, more officers will be needed. The number suggested to increase will suffice for 8 additional companies, with the field officers of one regiment.

All regiments of the line, having twelve companies each, should have when complete one colonel, one lieutenant-colonel, three majors, one regimental adjutant and one regimental supply officer performing the triple duties of regimental quartermaster, commissary and paymaster. The regimental adjutant and supply officers are to have the *rank* and pay of captains.

During time of peace only eight companies, troops, or batteries of each regiment are to be manned. The officers of the remaining four companies are to be utilized on the various details. In no case should officers remain continuously from their regiments more than 4 years, in order that they may not lose touch with the requirements of troops. At the end of 4 years they must be required to serve with the troops for at least one year before being again detached. No second lieutenants are to be at all detailable for detached service, but may replace in regimental duty, absent first lieutenants. Assuming a total of 51 regiments, 663 officers will become available for the various details already enumerated. Omitting second lieutenants in skeleton battalions, we would obtain 459 extra officers available for details.

As we have already seen, 534 officers will be required for the various details. The full number of three lieutenants for companies of infantry need not be provided for until it is possible to assign at least 70 enlisted men to each company. The lower grades of the skeleton companies can be filled gradually from the colleges and appointments from the ranks as well as from the Military Academy. Appointments from the ranks should not be made with a less number of years of service than required of cadets at the Military Academy.

As the army is increased by the increase of the population, the demands for officers for instruction purposes of National Guard, colleges and public schools will also increase. When the existing companies shall be filled to a maximum, additional regiments should be formed on the same basis as the others, giving by their skeleton battalions, the additional officers needed.

In the event of war, all officers return to the colors and the instruction work is carried on, as far as practicable, by retired officers.

For war purposes each company is to be expanded into a battalion, thus transforming the original 4 company battalion into a regiment of three active battalions with a depot battalion to which recruits are to be sent for instruction. The regiment in the field will be kept filled by drafts from the depot battalion.*

* As will be seen in Appendix A, the 33,500 men can form on the peace organization 30 regiments of infantry, 12 regiments of cavalry, 2 regiments of light artillery, and 7 regiments of sea-coast artillery—a total of 51 regiments which will provide something more than one per state. By making the war strength of sea-coast batteries, companies and troops 120 and of light batteries 150 the proposed method of ex-

In all commands there are old and partially disabled soldiers who are capable of doing garrison duty and instructing recruits, but are not well fitted to take the field. These should be assigned to the depot battalions. Convalescents not quite able to do field duty should be assigned to the depot battalion, to aid in the instruction of recruits. All recruits for the regiment are to be previously instructed in the depot battalion.

All enlistments in regular regiments should be credited to the state in which they are made.

The additional captains and first and second lieutenants required for this expansion can be obtained from the officers of the National Guard who hold certificates of competency received after instruction with regular regiments previously referred to. These are to receive commissions from the President as U. S. Volunteers, to be held only during the continuance of the war.

The approach to settlement of the Indian question has enabled the authorities to abolish many small posts and work towards the establishment of large regimental posts. This is conducive to improved discipline, instruction and *esprit de corps*.

Each state is striving to secure the establishment of a regimental post within its border. This is clearly the proper course to pursue as far as can be done consistently with the number of regiments and the frontiers to be guarded. The regimental posts can then become schools of instruction for the National Guard of the states in the manner already indicated. Theoretical instruction by lectures and recitations, the practical solution of problems of minor tactics, and the game of Kriegspiel, can all be more advantageously carried on at large posts. Discussion of papers read at the lyceums will be apt to have more value.

Each regimental post should be capable of expanding so as to quarter a regiment of twelve companies on a war footing. The posts established near the larger cities should have in addition, barracks for at least one battery of light artillery and four troops of cavalry.

There should be a magazine or arsenal attached to each regimental post, in which are stored the arms, accoutrements and camp equipage for forty additional companies on a war foot-

pansion will give a field force of about 215,000 men. Such a very great expansion assumes the Regular Army enlisted men to be highly trained and the people having had some previous military instrnction.

ing. These stores should be issued, from time to time, and replaced by new stores.

General Service Corps.—There are certain special duties to be performed at each post which are unavoidable. They usually require skilled or especially intelligent men. These are selected from the command, and deplete the already small companies and reduce their efficiency.

Theoretically they are supposed to receive some instruction, at stated times, with their commands. Practically, despite the efforts of post and company commanders, this is but half done. The exigencies of the post service continually interfere, and it is a constant struggle of company commanders to get their extra duty men for military instruction, and the post quartermaster to detain them for his work.

By these details the companies are depleted of some of their best men. Many of these would be selected as non-commissioned officers, but the pay of the latter is considerably smaller than that of privates receiving extra duty pay in addition to the pay of their grade. These men are consequently unwilling to become non-commissioned officers. The influence upon the efficiency and discipline of a company cannot but be bad when the non-commissioned officers are more poorly paid than some of the privates, and non-commissioned positions will not consequently be sought for. The minimum details at any post however small, will not fall below the following estimate:

1 baker, 1 carpenter, 1 blacksmith, 1 tinsmith and plumber, 2 teamsters, 1 post head-quarter clerk, 1 assistant to quartermaster-sergeant, 1 assistant to commissary-sergeant, 1 assistant to ordnance-sergeant; this makes a minimum detail of 10 men at each post.

There are at present 97 garrisoned posts in the army. Assuming that each requires the minimum number of 10, we have an aggregate of 970 men taken from the number of fully effective men.*

A General Service Corps should be formed composed of skilled teamsters, carpenters, blacksmiths, plumbers, bakers and

* The report of the Inspector-General for 1891 gives the present and absent at the annual post inspection, not including Engineer or Ordnance posts, at 22,171. The strength of enlisted men present under arms was 14,222. The special, extra and duty men present at posts amounted to 3771 enlisted men, or not far from 25 per cent. of the entire available strength present under arms.

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clerks. These should be sub-divided into a quartermaster and commissary corps and general service clerks. They should number 1000 privates and be graded into 3 classes with a graduated pay, the craftsmen receiving a greater pay than privates of the line.

Non-Commissioned Staff.—The present number of quartermaster and commissary sergeants should be selected from the infantry and cavalry commands, whilst the ordnance sergeants should be taken from sergeants of artillery who have qualified as first-class gunners.

A school should be established for the instruction of ordnance sergeants. They should be required to pass through a course of at least two years to prepare them for the proper care of the very costly munitions and artillery machines.

Practical electricians, machinists and steam engineers will be needed in the operation and care of our coming armament. Grades of non-commissioned officers should be established for this. They should receive sufficient pay to induce skilled artisans to seek the positions. They should be assigned to artillery posts in the same manner as are ordnance sergeants, and should be permitted to be married men and have good quarters provided for their families, to induce capable men to seek the position.

No changes regarding the status of the Hospital Corps or enlisted men of the Signal or Ordnance Corps suggest themselves.

Regimental Bands.—Regimental bands should be completely provided for by the government and not left to drag out a precarious existence, maintained with very great difficulty. In times of peace they tend to relieve the monotony of garrison life and aid to making the soldier contented with his lot. In campaigning the music tends to cheer and brace up the soldier, especially when making long marches. When going into bivouac the cheering strains alleviate his fatigue. Going into battle the music inspires the soldier and aids to heroic action. Good musicians can only be retained by good pay. Bands should be enabled to earn additional compensation by being permitted to play in adjoining towns, provided they do not underbid the civilian bands. One band per state will certainly interfere very little with the earnings of civilian musicians. The Band Leader should be a commissioned officer in order to enable him to properly control the band and to give him pay and status commensurate with the ability required.

Gymnastic Training.—The deadliness of modern weapons will cause commanders to endeavor, more than ever, to attain their objective points by manœuvring rather than by direct assault. More will therefore depend upon the celerity of marching and powers of endurance of the troops.

Both of these may be enhanced by gymnastic training. European armies, particularly the French and German, give much time and attention to gymnastic exercises, which tend to develop the lungs, strengthen the muscles of the legs, and render the soldier agile.

Well-equipped gymnasiums should be provided at all posts, and the gymnastic exercises made a part of the daily routine. Excellence as gymnasts should be stimulated by individual prizes. Companies should be pitted against each other in making long marches both in light and heavy marching order.

Whenever the facilities exist, instruction should be given in swimming and every man labored with until he can swim at least 300 yards without assistance.

Pay of Enlisted Men.—Modern warfare demands greater intelligence of the rank and file than heretofore. A small army such as ours will always be, should be efficient in every element. The privates should be capable of performing the duties of the lower grades of non-commissioned officers in case of war and consequent enlargement of the army. The army is, at best, expensive to keep up. It is a waste of money to keep up anything but the very best. The difference of cost of supporting an army of choice material, and one of the chance drift-wood of the nation, is a bagatelle compared to the total cost. We want intelligent men, above the standard of the average day-laborer. We must make the pay, allowances and privileges more than that received by the latter before we can reasonably expect to maintain a thoroughly efficient army raised by voluntary enlistment.

The average monthly pay of the agricultural laborer in 1890 was, with board, $12.45, without board $18.38. The maximum monthly pay was in Nevada, without board $35.00, and with board $23.00. In Massachusetts and Rhode Island it was respectively $18.50 and $18. Board in these states was considered equivalent to $12.00 per month. The minimum pay of the soldier should at least equal the maximum pay of the laborer. Allowing for board and clothing this would amount to $19.53 per month. The pay should be fixed at $20 per month. The medical attendance and

privilege of retirement will serve as an additional inducement. The present rules of increase of pay with length of service should also hold. With increased requirement for artillery, its privates should be classified, the 1st, 2d, and 3d class gunners receiving $3.00, $2.00 and $1.00 per month more pay respectively, than those not classified.

The pay of non-commissioned officers should be such that the lowest grade receives more than the maximum pay of any private in the same regiment or corps, including service and extra-duty allowance, and should at least equal the average pay of machinists, carpenters, etc. Assuming the pay of privates upon enlisting to be $20 and the retirement period to be 25 years, the maximum pay will be $28. The pay of a corporal should be at least $32 and of a duty sergeant $42 with additions of service pay.

Next to the captain, the efficiency of a company depends upon the ability and character of the 1st sergeant. His duties are onerous, and the best results can only be obtained when he combines executive ability with force, tempered by tact. The position is in every way a responsible one and the men qualified to fill it are few. The pay should therefore be correspondingly great. It should be no less than one-half the pay of a second lieutenant, with the corresponding increase for length of service as a 1st sergeant.

The pay of cavalry and light artillery artificers, blacksmiths, farriers and saddlers should be increased to at least $25 per month with length of service additions. These artisans can earn more in civil life and it is difficult to obtain them.

The extra pay of company cooks is well earned but it should not be paid with the funds accruing from the savings of the ration but paid directly by the government.

Well-cooked food should be one of the inducements which the government offers the soldier. A cooking school should be established and sergeants instructed in both field and garrison cooking. These sergeants, upon completing the course should be appointed regimental and company mess sergeants, who should impart instruction to company cooks.

Employment of Discharged Soldiers.—As an additional incentive to enter the army, and to good behavior whilst in it, the War Department should have a "Bureau of Employment" charged with obtaining employment for discharged and retired soldiers.

Besides the character on the discharge, each soldier should receive from his captain a certificate approved by the regimental commander specifying character as to sobriety and trustworthiness, trade, if any, number of days in guard-house, number of court-martial trials and nature of charges. The most rigid care should be exercised in these certificates. Duplicates of these are to be forwarded to and be filed by the Bureau of Employment.

Only those having the best records should be assisted. The minor positions in government employment should be first given to worthy soldiers. The supply of war veterans who have had precedence in getting public employment will be at an end in a very few years and it will work no injustice to give the same precedence to those soldiers who have served the republic faithfully in its regular army.

The limits of this paper prevent giving much more than the outlines of the various ways in which the defense of the country can be provided for. The initiative legislation must come from Congress. The state legislatures will be sure to pass the laws necessary to utilize the instructors, allowances, rifle ranges, etc., which the general government may make available. None of the measures proposed involve things which have not been initiated by the people in some parts of the country, and with great success. To carry them into effect will cost some money, but "an omelette cannot be made without breaking eggs." A large proportion of the money to be expended will go back to the people in the form of wages. We have already commenced large expenditures for the armament and protection of the coast; but as yet nothing has been done to provide the small-arms, and equip ments, which would be needed to arm the people.* The older boys of the schools might be equipped for the present with the cal. 45 Springfield, which will be now turned in as soon as the new guns are made. Many are doubtless at hand in reserve. But it is a question whether the United States has a sufficient reserve of rifles even of calibre 45 rifles to arm 500,000 men. In case of war we would have again to make a scramble to buy up the obsolete arms of Europe as we did in 1861. As soon as we have determined finally as to the calibre to be used, energetic measures

*The question of the kind of magazine gun to be made is extraneous to the purpose of this paper. But it *is* a question whether, for new levies, a simple single loading small bore rifle would not be better than magazine rifles. Might not a large number of these be made for the reserves?

should be taken to have the arms, etc., made. The national armory, run to its utmost capacity, could not make the supply needed to arm the reserves in 25 years. Private manufacturers might be called upon to make the light arms required for the instruction of the schools as well as for some of the reserves. No country in the world could make the arms required so well and so quickly as could we. But it requires nearly a year, at best, to make the special tools necessary to make any new form of rifle in large numbers. It would be marvellous to produce the numbers required in less than five years. The necessary appropriations should be made at an early day so that the work may be commenced without loss of time.

Wars are expensive, not alone in the direct cost of life and property, but, for us, in the continuous tax of enormous pension lists. The amount expended for pensions in a single year will serve to arm and equip an army of 2,000,000 men, including 2000 pieces of field artillery and 100,000 cavalry.* But we should count as the greatest cost of war the national humiliation of the defeat which might result from our own supineness. Foreign nations are fully informed of our weakness and may take advantage of it. Our wealth and prosperity create envy and our weakness tempts aggression. Arbitration may not always succeed in averting war. Both sides may feel so entirely sure that they are in the right that they will not accede to the judgment of the arbitrators but will resort to war. This will more surely ensue if one of the parties is both weak and wealthy.

A city that would not provide itself with an efficient fire department would be considered shiftless and improvident. Since the close of the Civil War we have made but little preparation for our defense and trusted to Providence to avert war and it has favored us beyond other nations. Can we be sure that we shall continue to be favored beyond any historical precedent?

Prudence dictates a thorough preparation in every way consistent with and not endangering our republican institutions. What is everybody's business is said to be nobody's business. The methods pointed out for the national defense demand joint

* The total amount of pensions paid since 1861 to 1891 is $1,277,261,263.07. The amounts paid in 1861, 1865 and 1891 were as follows:

1861	$1,072,461.55
1865	8,525,153.11
1891	118,548,959.71

legislation on the part of the states and Congress. Action is necessary. If the initiative were taken by Congress, the states would quickly follow in doing their share. The people are patriotic and will quickly respond to all reasonable demands to provide for the national defense. This has been shown in the matter of the development of the Naval Reserves without the initial sanction of congressional legislation but simply under the fostering encouragement and coöperation of the Navy Department. Remissness to act and our consequent deplorable weak condition is directly chargeable to Congress. All of our Presidents, from Washington down, have made recommendations for the better organization of and provision for a National Militia. Bills have been introduced and committees have made most earnest reports recommending their passage. But the recommendations have been ignored and the bills have all died stillborn, usually because of insufficient general interest to push them through the eager crush to pass measures of moment to political parties or for local betterments. The broad interests of the country have been too frequently relegated to the background.

We can only hope that the statesmen amongst our legislators will combine to push through energetically all measures needed for the defense and preservation of our great country. Let us do all that thoughtful foresight and patriotic love of country can indicate as necessary and then put our trust in Providence to aid us in securing continued liberty and prosperity.

APPENDIX A.

PROPOSED ORGANIZATION OF THE REGULAR ARMY.

GENERAL OFFICERS.	NUMBER.
Lieutenant-General	1
Major-Generals	3
Brigadier-Generals	6
Total	10

ADJUTANT-GENERAL'S DEPARTMENT.

		RANK.	NUMBER.
Adjutant-General	=	Brigadier-General	1
Assistant Adjutant-Generals	=	Colonels	6
Assistant Adjutant-Generals	=	Lieutenant-Colonel	3
Assistant Adjutant-Generals	=	Major	8
Total			18

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INSPECTOR-GENERAL'S DEPARTMENT.

		RANK.	NUMBER.
Inspector-General	=	Brigadier-General	1
Assistant Inspector-General	=	Colonels	2
Inspectors	=	Lieutenant-Colonel	3
Inspectors	=	Major	9
Total			15

JUDGE ADVOCATE GENERAL'S DEPARTMENT.

		RANK.	NUMBER.
Judge Advocate General	=	Brigadier-General	1
Asst. Judge Advocate Generals	=	Colonel	2
Judge Advocates	=	Lieutenant-Colonel	3
Judge Advocates	=	Major	9
Total			15

SUPPLY DEPARTMENT.

		RANK.	NUMBER.
Chief of Supply Department	=	Brigadier-General	1
Asst. Chiefs of Supply Dept.	=	Colonels	6
		Lieutenant-Colonels	6
		Majors	15
		Captains	50
Military Store-keepers	=	Captains	7
Total			85

Enlisted Men.

Quartermaster Sergeants		80
Commissary Sergeants		120
Total		200
General Service Corps	Privates First Class	300
	Privates Second Class	300
	Privates Third Class	400
Total		1000

MEDICAL DEPARTMENT.

		RANK.	NUMBER.
Surgeon-General	=	Brigadier-General	1
Assistant Surgeon-Generals	=	Colonels	5
Deputy Surgeon-Generals	=	Lieutenant-Colonels	6
Surgeons	=	Major	50
Surgeons	=	Captains	81
Surgeons	=	1st Lieutenants	44
Total Commissioned			241

Enlisted Men.

Hospital Stewards	126
Acting Stewards	62
Privates	605
Total enlisted	793

CORPS OF ENGINEERS.

		RANK.	
Chief of Engineers	=	Brigadier-General	1
		Colonel	4
		Lieutenant-Colonel	4
		Majors	27
		Captains	38
		1st Lieutenants	34
		2d Lieutenants	26
Total Commissioned			134

Enlisted Men.

Sergeant-Major	1
Quartermaster Sergeant	1
Principal Musician	1
Musicians	12
Sergeants	60
Corporals	96
Privates 1st Class	414
Privates 2d Class	415
Total enlisted	1000

ORDNANCE DEPARTMENT.

		RANK.	NUMBER.
Chief of Ordnance	=	Brigadier-General	1
		Colonels	6
		Lieutenant-Colonels	4
		Majors	10
		Captains	24
		1st Lieutenants	20
Ordnance Store-keepers	=	Captains	3
Total			58

Enlisted Men.

Sergeants of Ordnance	53
Corporals of Ordnance	71
Privates 1st Class	210
Privates 2d Class	116
Total enlisted	450

XUM

ARTILLERY ADMINISTRATION.

	RANK.	NUMBER.
Chief of Artillery	= Brigadier-General	1
Inspectors of Artillery	= Lieutenant-Colonels	3
Assistant Inspectors of Artillery	= Majors	8
Total commissioned		12

Enlisted Men.

Ordnance Sergeants	90
Artificer Sergeants	90
Electricians	90
Total enlisted	270

SIGNAL CORPS.

	RANK.	NUMBER.
Chief Signal Officer.	= Colonel	1
	Majors	4
	Captains	8
Total		13

Enlisted Men.

Sergeants	50
Corporals	50
Total	100
Regimental Chaplains	44

TROOP OF CAVALRY.

Captain	1
First Lieutenant	1
Second Lieutenants	2
Total	4

Enlisted Men.

First-Sergeant	1
Supply and Mess Sergeant	1
Stable Sergeant	1
Veterinary Sergeant	1
Duty Sergeants	4
Corporals	8
Trumpeters	2
Farriers and Blacksmith	2
Saddler	1
Wagoner	1
Privates	48
Total enlisted	70

BATTERY OF LIGHT ARTILLERY.

Captain	1
First Lieutenant	1
Second Lieutenants	2
Total	4

Enlisted Men.

First-Sergeant	1
Supply and Mess Sergeant	1
Stable Sergeant	1
Veterinary Sergeant	1
Duty Sergeants	4
Corporals	8
Trumpeters	2
Farriers and Blacksmiths	2
Wheelwright and Carpenter	1
Machinist	1
Saddler	1
Wagoner	1
Privates	60
Total enlisted	84

BATTERY OF SEA-COAST ARTILLERY.

Captain	1
First Lieutenant	1
Second Lieutenant	2
Total	4

Enlisted Men.

First-Sergeant	1
Supply and Mess Sergeant	1
Duty Sergeants	4
Corporals	8
Musicians	2
Artificers	2
Privates First Class	5
Privates Second Class	10
Privates Third Class	10
Privates	27
Total	70

COMPANY OF INFANTRY.

Captain	1
First Lieutenant	1
Second Lieutenants	2
Total	4

Enlisted Men.

First-Sergeant	1
Supply and Mess Sergeant	1
Duty Sergeants	4
Corporals	8
Musicians	2
Artificers	2
Privates	52
Total	70

REGIMENT OF CAVALRY.

Colonel	1
Lieutenant-Colonel	1
Majors	3
Veterinary Surgeon—Captain	1
Captains	14*
First Lieutenants	12
Second Lieutenants,	16†
Second Lieutenant—Principal Musician	1
Total commissioned	49

Enlisted Men.

Sergeant-Major	1
Quartermaster Sergeant	1
Veterinary Steward	1
Chief Trumpeter	1
Saddler Sergeant	1
First-Sergeants	8
Supply and Mess Sergeants	8
Veterinary Sergeants	8
Stable Sergeants	8
Duty Sergeants	32
Corporals	64
Trumpeters	16
Farriers and Blacksmiths	16
Saddlers	8
Wagoners	8
Privates	419‡
Total enlisted	600

*Two captains acting one as regimental adjutant and one as quartermaster.

†No second lieutenants are assigned to the 4 skeleton companies.

‡35 Privates are allowed for regimental band and regimental headquarter detachment. The above remarks refer to all the other regimental organizations.

REGIMENT OF LIGHT ARTILLERY.

Colonel	1
Lieutenant-Colonel	1
Majors	3
Veterinary Surgeon—Captain	1
Captains	14
First Lieutenants	12
Second Lieutenants	16
Second Lieutenant—Principal Musician	1
Total	49

Enlisted Men.

Sergeant-Major	1
Quartermaster Sergeant	1
Veterinary Steward	1
Chief Trumpeter	1
Saddler Sergeant	1
Artificer Sergeant	1
First-Sergeants	8
Supply and Mess Sergeants	8
Veterinary Sergeants	8
Stable Sergeants	8
Duty Sergeants	32
Corporals	64
Trumpeters	16
Farriers and Blacksmiths	16
Saddlers	8
Wagoners	8
Wheelwright and Carpenters	8
Machinists	8
Privates	515
Total enlisted	713

REGIMENT OF SEA-COAST ARTILLERY AND INFANTRY.

Colonel	1
Lieutenant-Colonel	1
Majors	3
Captains	14
First Lieutenants	12
Second Lieutenants	16
Second Lieutenant—Principal Musician	1
Total	48

Enlisted Men.

Sergeant-Major	1
Quartermaster Sergeant	1
Principal Musicians	3
First-Sergeants	8
Supply and Mess Sergeants	8
Duty Sergeants	32
Corporals	64
Musicians—Company	16
Artificers	16
Wagoners	8
Privates	451
Total enlisted	608

Enlisted Men Arranged as Proposed.

12 Regiments Cavalry	7200
2 Light Artillery	1426
7 Regiments Sea-Coast Artillery	4256
30 Regiments Infantry	18,240
Total of line	31,122
Engineer Regiment	1000
Ordnance Detachments	450
Ordnance Sergeants	90
Artificer Sergeants	90
Electricians	90
Signal Corps	100
Hospital Corps	793
General Service Corps	1000
Supply Corps	200
General Service Clerks and Messengers	170
Total of special corps	3983
Total enlisted of line regiments	31,122
Total	35,105

The Hospital Corps and General Service Clerks, etc., are included in the above estimates and are not included in the present strength of the army. Their aggregate is 963. The total strength of the proposed organization including these is only 8084 greater than the present organization, and but very slightly in excess of the ratio fixed upon of one-twentieth of one per cent.—that amounting to 33,500 on the basis of a population of 67,000,000 in 1894. The difference of 1605 might be made up by deducting from the strength of the companies pro rata. A temporary reduction of 4 men per company will accomplish this.

The Commissioned Officers will number as follows:

	PROPOSED.	PRESENT.	INCREASE.	DECREASE.
General Officers	10	9	1	
Adjutant-General's Department.	18	17	1	
Inspector-General's Department.	15	7	8	
Judge Advocate-Gen. Dept.	15	8	7	
Supply Department	85	121	—	36
Medical Department	193	193	—	
Corps of Engineers	134	117	17	
Ordnance Department	68	58	10	
Artillery Administration	12	—	12	
Signal Corps	13	10	3	
Regimental Chaplains	44	30	14	
Cavalry	576	432	144	
Light Artillery	98	280	154	
Sea-Coast Artillery	336			
Infantry	1440	877	563	
Total	3057	2159	934	36

The present aggregate of commissioned officers is 2159. The proposed organization increases this 898. The line officers of the skeleton battalions of the new regiments could be appointed gradually as the demand for their services for instruction of National Schools and Colleges increases.

ANNOTATIONS BY GENERAL SHERMAN.

War Department Library,
Washington, May 9, 1893.

Secretary Military Service Institution: The following annotations made by the late General William T. Sherman while commanding the army of the United States, were found in a copy of Soady's "Lessons of War," belonging to the General, after his death. At the suggestion of General J. M. Schofield, now commanding the army, the notes were copied into the volume of the work belonging to the Library of the War Department, General Sherman's copy being now in the possession of his family. They are eminently characteristic of the able soldier whose thoughts they embody, and it is a great pity that the notes ended before quite half through the volume had been reached.

David FitzGerald, Librarian.

"Danger is very apt to distort men's vision. I have known men of good courage utterly unable to count correctly the number of horsemen passing a gap, or the number of shots between two periods of time."

"Generals in chief command generally worry more about things which never happen, than about real catastrophes. Unseen but apprehended danger causes more feeling than any amount of real danger which is seen."

"A general must be familiar with the temper and qualities of his men, must know what they can do and what they *cannot* do, and therefore previous service with them is essential."

"The simplest test of true courage is to ascertain, in the midst of confusion and supposed danger, that all the senses are perfect, and that a man remembers numbers, distances, etc., etc."

"Fortune favors those who work hardest to secure it,—or favorable accidents are in inverse proportion to neglects, and mistakes."

"Exact knowledge, say of geography and physical reasons, extends the range of vision, and gives advantage to the possessor in the exact measure of his knowledge. If a general conceives a

campaign, or even a subordinate movement, without thinking afterwards, all his acts tend to that end and thus by consequence almost ensure success."

"The absolute separation of politics from the management of armies has advantages and disadvantages. As a rule, politicians are not soldiers, or men of action; but the moment soldiers achieve results, the politicians claim the honor, and forthwith depose and belittle the soldier."

"I never attended or saw a Council of War, in my life. W. T. S., Dec. 28, 1870."

"In New Orleans in 1851, I heard Gen. Twiggs tell most humorously of Gen. Scott's Councils of War in Mexico, when he invited his generals to express opinions; but as usual, when Gen. Worth tried to reason, Gen. Scott would put him down, by announcing his already formed opinion."

"Strategy is the art of handling an army in an extended theatre of operations to the best advantage. Tactics is the art of handling an army in a limited field, as though in the immediate presence of an enemy."

Of the section on "Coast Defense," he says: "This whole chapter on Coast Defense is excellent. I have not found elsewhere as much valuable knowledge so well condensed."

In conclusion, Gen. Sherman writes:—"I have not read the whole of this book, but have followed its general system and 'logic.' I think it better than Jomini, which is too dull, prosaic, and didactic,—better than Hamley, who, however, skillfully illustrates principles by examples. This book better than others recognizes the force and effect of modern inventions of steamers, railroads and breech-loading rifles. W. T. S."

SMALL ARMS FIRING.

By Lieut. CHARLES H. MUIR, 2d U. S. Infantry.

THIS subject is approached with the spirit neither of the iconoclast who delights in indiscriminate destruction, nor of the careless saunterer who in passing lops off the heads of flowers as well as weeds.

He who plans and builds, though his plans be defective and his work faultily performed, deserves more credit then he who destroys, no matter how well conceived and executed are the plans of the latter.

In every structure, however, some parts are especially deserving of praise, while other parts are noticeable for their incongruity if not actual weakness. In, and on, every living organism, if microscopy teaches aright, there are parasitic growths, some harmless, others malignant. And, if in passing, some of these undesirable parts and malignant parasites are touched upon, let the experience acquired in seven years' work as a company officer, three years' work in charge of post representatives to Department Competition, two years' experience as range officer at Department Competition and four years as competitor in Department, Division, and Army competitions, be my excuse.

Taking the regulations for this subject, we find on pages 6 and 7 a sentence worthy of special attention. It is: "Progress in Rifle and Carbine firing depending not only upon the method of instruction, but to a great degree upon the capabilities of the instructor, it is essential that company officers should themselves become proficient, not only in the theoretical but also in the practical details of the subject."

Following the regulations in order, we next come to sighting drills. In this, sufficient prominence is not given to the use of the peep sight. Many have learned by experience that this sight is more accurate, and the method of using it easier learned, than either the fine, half, or full sight methods of the open notch. The eye easily adjusts the line of sight to the centre of the peep, and the strain necessary to take the same amount of front sight is avoided. The open sight allows a greater rapidity of fire, but

at a sacrifice of accuracy. Even with the peep sight, one man in a very short time can shoot away all the ammunition carried by a company.

In teaching the effect of inclining the rifle either to the right or left, I believe the best and quickest way is to impress upon the recruit's mind the fact that the line of sight is a fixed line extending from his eye to the point aimed at, and that in aiming the two sights are brought into this fixed line. This line can be represented by a ramrod, while the line of the axis of the bore can be represented by another, which is fastened in its relative position to the one representing the line of sight. Then by revolving the two ramrods about the one representing the line of sight as an axis, the effect of inclining the piece can be demonstrated.

The importance of position and aiming drill cannot be overestimated. The accuracy with which the rifle is fired depends largely upon the feeling of confidence in the person firing, and this feeling is increased by any and all things that make the soldier feel more at home in discharging his piece. Especially is this true of the third exercise in these drills, for, besides practice in the correct positions and readiness in assuming them, it includes the neccessary unison between hand, eye, and brain. The line of sight is not obscured as in firing, hence it is practicable to correct any tendency to flinch at the moment the piece is discharged. Carried out faithfully, this exercise gives much better results than gallery practice, for the latter as laid down and usually carried out, is a delusion and a snare.

The size of a target laid down for a range of fifty feet is 7″ x 6″ with a 1″ circular bull's-eye and two other circular divisions with diameters of 3″ and 5″. Carrying these dimensions to two hundred yards, we have a target 84″ x 72″ with a 12″ bull's-eye and circles of 36″ and 60″ to mark the the four and three rings. Nor is this all, the leaden ball striking the iron plate flattens out until it covers a circle of fully twice the diameter of the ball. Thus it can be seen that in gallery practice the value of the shots are, as a rule, advanced fully one unit over what they would have been in firing on the range at two hundred yards with the same accuracy. The result of this is that the recruit makes scores that give him a highly exaggerated idea of his ability to shoot, and the highest barrier that can be raised against real progress is here built.

Holding this practice within doors is objectionable, as there

are few buildings at posts sufficiently well lighted to prevent injury to the eyes from continued practice.

To replace the features so far objected to, the practice could be held in the open at targets of the same size relatively as the range targets, and of paper to prevent the increased value of the shot due to the flattening of the ball. The distances could be changed so as to cause the one-sized target to assume its proper relative size. The charge of powder should be at least six grains; eight give a still better result. With four grains any inaccuracy in measurement has a great relative effect on the velocity of the ball and consequently on its regularity.

To obviate the trouble from rapid destruction of the small target by the great number of balls, the paper target could be pasted upon canvas stretched upon frames similar to the auxiliary frames used on the regular targets. The frames so prepared could then be slipped into an opening in the front side of a box, much as a window is put in the wall of a room. The back side of the box could be protected by filled sand-bags constructed of old gunny sacks.

A large portion of gallery practice, even thus improved, could be replaced by the third exercise in position and aiming drill. Besides the awakening of fresh interest, about the only advantages the practice possesses, is in showing the instructor whether or not the work is being honestly performed, and making manifest errors that might otherwise escape notice.

Coming to range practice, the first noticeable and harmful incongruity is the practice of picking out favorable weather for firing. The object of all rifle firing is to make the soldier more efficient in battle, and practice under the conditions there to be met, is certainly beneficial, while a lack of such practice leaves a deficiency in training that is bound to make itself apparent at a time when efficiency is most to be desired.

Let the preliminary instruction of recruits be conducted in favorable weather, so they can get a good start; but when this instruction has reached such a stage that the recruit is deemed fit to take his place in the efficient strength of the company, he and his fellows should be required to fire under any and all conditions met in regular hours of practice set apart by the post commander.

The next noticeable incongruity is the practice of allowing sighting shots. This practice causes a habit of feeling about for

the proper elevation and adjustment, that, in actual combat, would put its possessor at a serious disadvantage.

I am not a believer in the use of a wind-gauge on a military rifle; but our present rifle has one, and the use of the same can be reduced to a simple rule:—multiply the number of hundreds of yards by six and the result will express in inches the change of point struck caused by shifting the wind-gauge one point.

In cleaning the rifle the use of the wooden wiping rod is enjoined by the firing regulations, but cannot be enforced. The iron rod is always present, and the soldier cannot always be prevented from resorting to its use, thereby injuring the rifling. Experience teaches that cleaning adds neither to the accuracy nor the preservation of the rifle. The residuum is fully as good a preventive of rust as oil, and the accumulation of lead in the bore can be removed and prevented by blowing down the muzzle between shots.

When the rifle comes to be considered entirely as a weapon and not as an aid to secure "colors" or "orderly," it will be easier to keep the rifles in better condition as weapons; and the practice of scouring them out with emery paper until the cartridge rattles about in them, will fall into disuse.

Passing skirmish, volley and file firing, all of which, even with their imperfections, are highly satisfactory when the letter and spirit of the regulations are carried out, we come to practice at disappearing and moving targets, which, as far as my experience goes, is entirely ignored. All recognize the value of this practice, but when the subject is brought up, they cry out that the allowance of ammunition is not liberal enough to allow it. A closer watch of the skirmish line frequently causes the supply of ammunition to seem much greater, but causes a corresponding falling off in the figure of merit.

Still another form of practice laid down in pars. 475–76 is completely ignored. These paragraphs direct practice from shelter trenches, a form of firing that must be largely depended upon, and in cases where the accuracy of a single shot may turn the tide of battle, and yet nothing is done to perfect the soldier in this kind of firing. The old cry of no ammunition is the excuse, but if the amount of ammunition expended in additional practice were devoted to this work, it can scarcely be denied that the battle efficiency of the soldier will be increased, even if

the much-sought-for figure of merit does suffer. Battles will never be won by figures of merit, real or fictitious.

This brings us to a subject that is recognized as dangerous ground. There is a strong tendency to cry "hands off"—coming from those who forget the exhortation of the teacher, that "If thy right hand offend thee cut it off and cast it from thee!" These words are as full of wisdom to-day as when uttered, and are applicable to all subjects. Had this offending right-hand of rifle firing been cut off as soon as it was discovered that it was offending the rest of the body, the latter, to-day, would be in a much healthier condition than it really is. For this "figure of merit," company commanders, spurred on by hope of praise, have striven, to the detriment of real efficiency and discipline. The only defense for its existence is that it sets a high standard of efficiency toward which all strive to climb. There is no figure of merit in drills! Will these same defenders of the figure of merit in rifle firing claim that the standard of drill is lowered by this lack? or, that the standard could be raised by formulating rules to determine the proficiency of each organization, and leaving these rules to be applied by the head of such organization with the surreptitous aid of the different members of the organization? What would be thought of an examining board that allowed those examined to pass upon the proficiency of their own answers? This is what is done in rifle firing. A couple of ambitious privates, permeated with a love for their company, under a sleepy corporal in the pit, and a company clerk expert in the use of eraser and pen, can, almost without effort, produce a figure of merit that is a reproach to the company possessing it.

There is no necessity for a figure of merit to keep the army in even its present state of proficiency. In every department there is an inspector of small arms practice, presumably selected for his special fitness and knowledge of the subject, empowered by the regulations to visit all the posts in the department, and to judge by personal inspection of the proficiency of each organization.

The intelligent carrying out of this inspection would necessitate another change, that would of itself be most beneficial to actual proficiency, and that is, practice in rifle firing during the entire year. By this means it would be put on the same footing as drill, in fact become a drill. Let there be regular hours set aside for rifle firing, and let it be carried on in connection with

other duties, instead of taking some short period when everything else is dropped, and, to a certain extent, forgotten, while a little hurried knowledge of rifle firing is learned, to be, in its turn, forgotten with even greater celerity.

The hours now consumed in drill could give a portion daily to some part of rifle firing, with the result of equal proficiency in drill, greater proficiency in rifle firing and less time expended in rests to break the monotony of a limited number of movements repeated a great number of times to fill out the time.

Suppose a regiment is ordered to take the field to-day. Under which method would it have the greater battle efficiency?

This reducing rifle firing to a drill, and doing away with the figure of merit, would obviate the evil effects on discipline now apparent. Company commanders would retain their proper positions as commanders, and not, for a limited time, become supplicants pleading with the men of their company to try and do the best they can to increase the figure of merit. Companies would appear on the range in a military manner, and not straggle out individually as the spirit moves them, and then straggle back on the plea that they do not feel like shooting just then. Last and not least, eyes would not be strained by trying to crowd too much into a short period, but would be kept in a healthy condition by constant practice.

This same method would cause estimating distance, the foundation of real efficiency, to assume its relative importance. The limited amount of ammunition would prevent too much time being spent in firing, while the ability to estimate the range is lacking. As it now is, the average soldier cannot estimate the distance of any object beyond point blank range with sufficient accuracy to make his ability to hit the bull's-eye at known distance of much practical value. It is truly a sad state of affairs that makes the expert target shot, who has worked so hard and so faithfully, and on whom so much time and ammunition have been expended, sink into insignificance in practical work, when firing beside a man who has never been on a range and who has not fired one-tenth the number of times the target-shot has. Yet such is the effect of the system as now carried out.

I do not wish to be understood as opposed to rifle firing, even in its present form. It has done incalculable good, and the method is the best so far tried. It at least teaches the soldier to

fire at known distances and with great accuracy. It is a system with which to have been allied is an honor.

I am aware there are many opposed to it in its present form, while some go so far as to deny that it does the least good. In support of their claims they will relate wonderful stories of how, on certain occasions, they were out hunting with two men, one an expert target shot and the other without any experience in target firing. A deer, elk, or bear gets up, the expert fires without effect, and then the novice fires and bags the game.

Admitting the main part of their story, I yet differ with them on one important point, *i. e.*, the lack of target practice on the part of their novice. He has had target practice of the very best kind. Unless his success was the result of a random shot, ninety-nine times out of a hundred he has had target practice far in advance of the system we now use. Every shot he has fired meant one cartridge less, and if the shot was without effect, the cartridge was considered thrown away. Frequently he has had the opportunity to fire but one shot, and on the accuracy of that one shot has depended the presence or absence of meat in his tent. Any considerable error in estimating distance was the most serious error of all, for on the correctness of his estimate depended everything else. His shots were fired without the aid of streamers to indicate the direction and force of the wind, and tables instructing him how much to shift the wind-gauge to compensate for that particular direction and velocity. He had to depend on the aids always present. The bending trees, the rustling grass or drifting dust gave him information as to how much his bullet would, under these conditions, be deflected in that distance. He did not stop to reduce this distance to points on his wind-gauge and then carefully adjust his sight to correspond to his estimate, but applied it directly by holding the necessary distance to the right or left. Above all he would not find, on investigating the failure of a hurried shot at short range, that an unreliable wind-gauge had become moved sufficiently to carry his bullet to the right or left of the object.

I am well aware that it is impossible to have a system of rifle firing for the army that would involve all these items, but the present system can be changed to give results more nearly equal to the results obtained in this practical way.

The changes necessary are these:—Take away the supposed aids of streamers and wind-gauge, and, that eyes may not be

injured, adopt a peep-sight placed at the small of the stock. Change the time spent in practice, from a few weeks,—during which everything else is dropped, and ears, eyes and patience tried to almost their limit,—to the entire year, making it a part of the daily drill, so as to keep the officers and soldiers in a state of constant practice, and so that estimating distance can assume the importance due it. Carry out the paragraphs requiring firing from shelter trenches. Finally, remove from the nest, out of which it has crowded the legitimate offspring, this cuckold, the "figure of merit," that is so misleading, so productive of reproach, so conducive to dishonesty, and so detrimental to real progress.

THE BEAR, THE LION, AND THE PORCUPINE.*

By Captain CHARLES H. CLARK, U. S. Ordnance Dep't.

TO the student of political events the problem of future possibilities in Asia has long been an interesting one. The destinies of this vast continent are in the hands of China, Russia and England. Japan, being rapidly developed and amazingly progressive, will doubtless in time exercise its influence. If the Chinese possessed in some slight degree the progressive spirit of their insular neighbors, then its swarming and crowded millions might in the near future give much anxiety to her neighbors on the west and south. Under existing conditions which tend to resist progress, the necessary preliminary internal developments will take place but slowly, and a comparatively long period may elapse before her military strength increases to threatening proportions, and a modern Jenghiz arises to attempt the conquest and devastation of Asia. So much for the dragon! Whether its first ravages will take place on the preserves of the Lion or the Bear, it is now impossible to consider.

To those who have carefully watched the progress of events in Central Asia, it has become evident that the closing years of this century may witness the "drama of the collision" of the two other powerful "colossi" now dominating Asia. The situation has been slowly but none the less surely approaching its crisis. In 1885, war was only avoided with much difficulty and after both nations had made vast preparations in anticipation of its outbreak. Mutterings concerning fresh difficulties are beginning to be heard, and before very long the Lion and the Bear may again find themselves face to face prepared for a desperate struggle. The contest then to be precipitated may do much to change the face of the old world politically.

The interest, personal and professional, which all must feel in the questions involved, is my excuse this evening for introducing the subject in some of its phases.

It is impossible in the limited time to consider either the steps

*Read before the Vancouver Branch of the Military Service Institution, March 20, 1893.

ARAL SEA
CASPIAN SEA
KRASNOVODSK
DESERT of KARAKUM
MERV
HERAT
DESERT
RUSSIA
&
ENGLAND
IN
CENTRAL ASIA
1893

64
68
72
76
80
44
40
36
32
28
KIZIL KUM
T A N
PAMIR PLATEAUS
KASHMERE
I A N I S T A N
O O C H ' I S T A N
DELHI
SIMLA
YARKAND R.
KULDJA R.
TASHKENT
SAMARKAND
BOKHARA

XUM

XUM

by which Russia has slowly acquired its possessions in Central Asia, or to any extent the motives which have prompted these advances in the face of such serious obstacles. It must suffice to state with reference to the acquisitions of our day, that in about forty years Russia has conquered an immense country, having an extent of about 30,000 square miles. This territory, in great part desert, is studded with rich oases, and peopled with about three and a half million inhabitants. The Khanate of Khokand has been annexed, Khiva and Bokhara transformed into dependent principalities. The wandering Khirghiz have been pacified, and the Turcomans, in great part subjected, have begun to give themselves up to peaceful occupations. Slavery has disappeared, as well as the destructive and bloody internal dissensions. Commerce is no longer molested, and one can now go about without arms in a country where caravans would not have ventured forty years ago, without an escort of several hundred men accompanied by artillery.

It has been necessary at times for Russia to make these barbarous people feel the extreme weight of her iron hand, but, the resistance broken, she has guaranteed the existence, property, and religion of the conquered, and has thus acquired not only the confidence and esteem of her new Asiatic subjects, but also that of neighboring peoples. The recent outbreak at Tashkent was doubtless due to the blind folly of religious fanaticism. It probably does not indicate any wide-spread disaffection. The priests and ruling classes are not supposed to look with kindly eyes upon the conquering stranger. That the substitution of rigid law for the old turbulence and lawlessness has promoted greatly the general prosperity and happiness of the subjected peoples, there can be no doubt. *That* is admitted by many of Russia's strongest enemies. Nearly thirty years ago Professor Vambéry declared that "* * the interests of civilization make us wish the most entire success to the Russian arms."

The Duke of Argyll declared in 1885 as follows:—"The conquest by Russia of the Tekké Turcomans and all the Khanates of Central Asia has been inevitable. No civilization, no commerce could be established in those regions until the conquest was accomplished. It is useless and undignified our perpetually remonstrating against advances which we could not prevent and in the interests of humanity ought not to regret."

In May, 1876, Mr. Disraeli declared in the House of Com-

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mons that he hoped to see Russia pursue her career of conquest in Central Asia, from which he anticipated great benefits to civilization.

Col. Adair, F. R. S., said in 1867 :—" May it never be British policy to endeavor to interpose obstacles in the march of a nation whose labors are for civilization. It is an advantage to civilization that the barbarous powers should feel the restraining hand of civil, military and judicial guidance."

Referring to the subjection of the Tekkés, the noted correspondent O'Donovan wrote *:—" Indeed, the conquest of these inveterate robbers promises to have an immense influence on the destinies of Central Asia. With a regular European military government substituted for the lawless sway of the Turcomans, the plains from the Oxus to the Caspian will be rendered secure for commerce, and will doubtless again be traversed, as of old, by caravans from the far East."

It is difficult to see any good ground for the English protests against these conquests. They are prompted by uneasiness as to the future safety of the Indian Empire, but that nervousness can hardly be considered sufficient reason for demanding that vast tracts of Central Asia be allowed to remain a " howling wilderness," preyed upon by marauding Turcomans and fanatical despots. But with reason or without, England has followed Russia in her advances persistently, entering protests and demanding explanations. She has repeatedly attempted to draw the line of " thus far and no farther." It has been the old story throughout of diplomatic and journalistic bluff and bluster, but with little effect on the slow, resistless advance of Russia.

"† Outcries were made about the expedition to Khiva (1873), but when the occupation had once become a *fait accompli* the same men and the same journals said that no harm was done. Again there were outcries and questions about the possibility of a Russian movement on Kashgar. Now, after Khokand is occupied, the conquest of Kashgar is looked upon as not so alarming after all."

At the close of Skobeleff's campaign against the Tekkés, great concern was shown lest Russia should occupy Merve. Threats were made that in the event of its seizure by the Russians, Herat must be occupied by the English. It is hardly necessary to add

* " The Merve Oasis." 1883.

† Eugene Schuyler.—" Turkistan "—Vol. II, p. 269.

that the "submission" of Merve was not accompanied by any serious demonstration on the part of England.

Regarding the motives which have prompted these conquests, opinions widely differ. Some English writers have arrived at the conclusion that the acquisitions have resulted from the prosecution of a deep-laid scheme which dates back a long period. An article in the *Quarterly Review* for January, 1887, contains the following: "To those who would fain believe that this rapid advance is the result of accidental circumstances, we would, *with full knowledge of the subject*, reply by challenging any high official, either Liberal or Conservative, in either India or England, to say *that he had not had absolute proofs before him* that the Russian advance is the result of a well matured design to dispute our empire in the East."

On the other hand, the extreme Russian view or claim is formulated by General Kuoropatkine, who states that: "The Russians have been actuated to advance toward the centre of Asia by the vicinity of immense steppes inhabited by two inimical people, the Kirghiz and the Turcomans. In seeking to protect the Kirghiz they have come in contact with Asiatic tribes given up to anarchy and have been forcibly led to subjugate them."

The actual causes may lie between these extremes, but in any event the result is the same. Russia has already acquired a firm position from which she can without doubt threaten the English hold upon India. Russia was not slow in realizing the situation, and since the Turkish war has doubtless made every possible effort to increase her advantage. If England remains without allies, she can in case of further important Russian advances, only reply to advantage by a blow where her superior naval strength can be brought into play, and may well consider whether she can longer afford to place obstacles in the way of Russia's European development, unless she is prepared to risk the losing of her Indian Empire.

With the approach of Russia to the boundaries of Afghanistan she seemed to have completed her conquests in that direction, and to have acquired a *solidarité* in her possessions, which was, doubtless, absolutely necessary for the maintenance of her sway in Central Asia.

A stable frontier had been constituted on the side of Persia, and that weak power, now apparently dominated by Russian influence, must be greatly relieved to have its northern boundary

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defined and protected by the presence of a powerful neighbor. The loss of a small strip of territory, over which she had been unable to maintain control, was a small price to pay for the security she now possesses. Before the advent of the Russians, life in northern Persia was hardly worth the living, due to the raids and maraudings of the Turcoman robbers. MacGahan states* that from "all they could gather" there were 27,000 Persian slaves in the Khivan oasis in 1873; and when Merve came under Russian rule many Persians were set free beside thirty-seven Russian subjects. In 1880, when that enterprising and lamented news correspondent O'Donovan was on his way to Merve, the Persian Prime Minister told him that he was unable to exactly define the northern frontier, and seriously referred him to the British minister for details on the subject. The "true inwardness" of this state of affairs is readily discerned.

The brilliant campaign of Skobeleff's in 1880, with the important acquisitions resulting therefrom, advanced the solution of the questions under consideration several decades. The manner in which he made "good Turcomans" of so many Tekkés, and good Russians of the remnants, was not only an agreeable surprise to Russia, but a most unpleasant awakening for England. The barrier which English statesmen had hoped would outlast their generation, had been completely demolished in one short but bloody campaign.

With reference to the Afghan boundary dispute of 1885, it is easy to understand how difficulties could arise when the Afghan claims extended vaguely beyond the natural mountain barriers, the land being occupied by nomads or by Turcoman tribes, subjected, if at all, to only a mere pretence of authority. After the fall of Khiva, the frontier had been pushed northward on the English maps so as to place Sarakhs at the angle. It is believed that this was done in a hap-hazard way without any definite knowledge as to the allegiance of the included inhabitants. It had become neecessary to keep Russia as far away from Herat as possible, and the necessity became particularly pressing after the "submission" of Merve. The disputed boundary as given in this map,† published in 1879 by two ex-officers of the English army, apparently coincides with or approaches very

* "Campaigning on the Oxus and the Fall of Khiva."

† "War Map of Afghanistan." Compiled and published 1879 by Capts. Jackson and Wyndham (late H. B. M. service).

closely that claimed by Russia in 1885. It is presumed that this was compiled from the India Office maps of date prior to 1873.

It is of little use here to attempt any discussion of the question as to which party first violated the territory in dispute, while awaiting peaceable settlement by the joint commission. Even the English authorities differ on that point. When the collision occurred, Russia showed plainly that there was to be no trifling in the matter. Then followed the usual delays of diplomacy, accompanied on both sides with busy preparations for war, and when the methods of peace finally prevailed, months elapsed before the settlement of the boundary, which now agrees in its main features with that proposed by Russia. England secured Maruchak for the Afghans, but had to resign all the remainder of the oasis of Pendjeh and the important position of Ak-Tepe at the junction of the streams. Of the 9000 square miles in dispute, it is estimated that 7000 were conceded to Russia. It was stated at about that time by a most excellent Russian authority* that the boundary line as regarded China had been peacefully settled. The chances for further difficulties of this nature then seemed small, but recent Russian "explorations" in the Pamir have caused further outbursts of English fears, and our attention is once more called to Afghanistan as the "buffer" state which now alone separates the unfriendly "colossi." The telegraphic dispatches of the past week† from India foreshadow important developments, possibly to take place within a few months.

The Russians in the southern Pamirs have completely turned Afghanistan and are appearing in the lower valleys of the Himalayas. They are evidently very much on the alert, and are quietly gathering in whatever lonesome tracts there may be thereabout feeling themselves neglected. From all indications, Russia is a little short of land in that quarter, and possibly would like a summer resort in the Himalayas, from which she might reach over and shake hands with her friends and admirers on the other slope. Tashkurgan, Surhad, and Ak-Tash are mentioned as now held by Russian outposts.

The English are pushing into the high valleys on the southern slope, and have very recently had some severe fighting with the mountain tribes beyond Chitral. Yassin is now given as English territory. It is believed to be only quite recently that

*Kuoropatkine.

†March 13 and 14.

the English have shown a desire to obtain a foothold among these fierce and hitherto independent mountain tribes.

And now we have all the circumstances ripe for another boundary dispute. Afghan blood has been shed for the second time, and the Chinese are said to have been forced back from their more advanced positions.

It seems that in 1872, Russia and England settled on the Oxus, from Khoja Sale to its head-waters in the Pamir, as the limit of Afghan rule. Badakshan and its dependencies were conceded to Afghanistan. If the geography of the Pamir region had then been better understood, the present difficulties might have been avoided. "*Rivers which are readily crossed, and pass through valleys both sides of which have much life in common rarely serve well as fixed boundaries." The upper Oxus (Panjah) has since been found to divide no less than four small Khanates,† the first three of which are claimed by Afghanistan, and the fourth by Bokhara. As attempt is made to administer these without regard to the conventional boundary, the necessity for a readjustment is becoming more and more apparent, especially since the forces of no less than four powers are now not far apart in this region known as the Pamir plateaus.

The position to be taken by Afghanistan in the approaching difficulties become now of the greatest importance. The conquest of Turkestan by Russia has so far been dearly purchased in men and treasure. The resources have been comparatively small, and the expenses of the civil and military administrations enormous. Russia has to look to the future for the reward for her labors. She would naturally desire the establishment in Afghanistan of a strong power well disposed toward her interests, lest the domination of English influence might unsettle her Asiatic subjects and threaten her rule in Central Asia. On the other hand, England is greatly alarmed concerning her vast Indian possessions, firmly believing that if the Russians are allowed to obtain a foothold in Afghanistan, from that moment intrigues will be set on foot among her natives princes, and she will be called

*Lieut. General Walker, R. E., C. B.

†Wakhan, Shugnan, Roshan and Darwak.

NOTE—It is difficult to understand "Alask's" position in the January number of the M. S. I. JOURNAL, when he questions the Ameer's right to exact tribute from Badakshan, or from those portions of the Khanates of Wakhan, Shugnan, and Roshan south of the established boundary, as this right seems to have been secured by the Russian concessions of 1872.

upon to protect her northwest frontier at an expense which her Indian exchequer could ill afford. To make use of the idea conveyed in a common western phrase, India is not being maintained as an English health resort, nor are they there solely from philanthropic motives to increase the happiness and improve the condition of its native races. And now for many years India has ceased to return to the conquerors the old interest on investments there. There still remains, over and above the trade interests, the political prestige of preserving this vast and populous territory, the hope of the military resources which it might supply under certain conditions, and the moral obligations which England owes to the subject millions. Should circumstances arise to increase greatly the expenses and difficulties of maintaining English hold upon India, then it is believed that a party would soon arise in England to advocate the withdrawal of English arms from the Indian Empire. The English insist that the Afghan ruler must be friendly to their interests, and a military embassy under Lord Roberts was but a few months since trying to arrange a meeting with the Ameer. The wily Afghan was then very much occupied with one of his rebellious tribes and unable to appoint a time of meeting. A telegram from Calcutta, dated March 13th, says that the Ameer has now sent a message to the Viceroy, stating that he will *not* enter into any conference regarding the troubles among the tribes on the frontier, claiming the right to deal with these tribes according to the sacred laws of his own people, without any interference from outsiders. The essence of what he says further seems to be that he is ready to fight "at the drop of the hat," either England or Russia, whichever first "dares to tread on the tail of his coat." To draw it mildly, this seems a trifle *unkind* towards the English, since he would face them armed in considerable part with Enfield and Snider rifles, which, together with one field battery, were presented to his uncle Shere Ali, as well as with many Martini-Henry rifles and a few improved field guns given to Abdurrahman himself in 1885.

The English have at certain times considered the permanent occupation of strategic points in Afghanistan, but that country has always proved itself a perfect "political porcupine," and the English from past experiences are loth to assume within its borders a position which might prove difficult and expensive to maintain.

A brief summary of previous relations between the *Lion* and the *Porcupine* may be of interest, and assist in arriving at an understanding of the present status.

Twice already has the Russian bogie wrought English fears to the point of declaring war against Afghan rulers.

In 1837 great fears were entertained in British India that Russia was obtaining undue influence over Dost Mahomed, the *de facto* ruler, and that a Russo-Afghan alliance was threatened. An envoy was sent to Kabul with a few insignificant presents which only served to disgust the Ameer. Without promising any sufficient advantages or rewards as the price of an English alliance, the Ameer was peremptorily called upon to abandon all negotiations with Russia and Persia. Not proving sufficiently amenable under such treatment, it was determined to depose Dost Mahomed by force, and substitute a former sovereign—Shah Soojah—then an exile in India and a pensioner on British bounty. Concerning the latter, an English writer * says: "It was now thirty years since the latter had been driven from his dominions. He had few adherents amongst the people; he was old, feeble, and profligate; and there seems to have been no reason why we should have endeavored to force him back upon a reluctant nation." But, unfortunately for the honor of English arms, the die was cast. In 1839 Kabul and Kandahar were occupied without serious opposition except such as was offered by the great natural obstacles met with on the way. Ghuzni was then stormed and captured. These three town with other outposts were held for two years by garrisons of English soldiers and native Sepoys. By September, 1839, a considerable portion of the forces had been recalled to reduce expenses, and as entirely unnecessary. Finally, when vigilance was relaxed, the English lulled by a blind and fatal confidence in themselves, and with apparently a total lack of realization of the treachery and blood-thirsty nature of the Afghans, then came the blind blundering and woeful weakness of those high in authority. Under pressure of attacks from the rebellious natives, which had not been anticipated and provided for, and adverse circumstances into which matters had been allowed to drift, the fatal order was given for the forces to withdraw from Kabul in midwinter.

As one example of the condition of affairs at this time, on

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* Edmund Ollier. "History of the Russo-Turkish War."

the night of November 2, 1841, the house occupied by the British envoy in the city of Kabul was surrounded by a mob; the envoy himself and all in the house, including women and children, were ruthlessly slaughtered. General Elphinstone, in his cantonment outside the city, on being informed that the envoy was beseiged, simply replied: "We must see what the morning brings, and then think what can be done." The morning brought a horrible picture of Afghan butchery in the city of Kabul, and to General Elphinstone only deeper misery and more utter helplessness.

The retiring envoy,—Sir William Macnaghten,—was treacherously murdered at a conference by Akbar Khan, son of Dost Mahomed, and this within sight of the English garrison. The demoralization was complete, however, and in face of every evidence of intended treachery, the treasure and most of the artillery was turned over to the enemy, and the memorable retreat began. When this opportunity offered, the fierce tribes bordering the route threw themselves likes hordes of hungry wolves upon the straggling column of troops and camp followers, as they helplessly tried to make their way through the frightful snow-covered passes which separated them from friendly succor at Jelalabad. The retreat became a rout. "*In truth it was no longer an army, it was a mob of famished, frozen and desperate wretches, each animated by one thought of escaping from that murderous pass, indifferent as to the fate of his comrades and lost to all consideration of national honor or of military self-respect."

With the exception of about one hundred prisoners, including hostages, women and children, who were afterwards recovered, but one man in all that column of nearly 17,000 souls finally escaped from the Afghan butchers and the terrors of that winter march. On the third and last awful and sanguinary day, the sentries on the walls of Jelalabad saw making his way slowly and painfully toward the fort a solitary horseman, "wounded, worn out, yet still holding in his almost nerveless grip a broken sword."

The garrison of Ghuzni, thinking to secure its safety by capitulation, was cut to pieces December 23, 1841.

Thanks to direct disobedience of orders on the part of Sir Robert Sale, commanding at Jelalabad, a gallant and successful defense was made there, and the Afghan besieging forces put to

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* Edmund Ollier.

flight. This afforded some consolation in those dark days of shame and despair.

To obtain revenge, a second army invaded the Afghan territory, forced the Khyber Pass in April, 1842, and relieved Jelalabad. Kabul being recaptured, its citadel and central bazaar were destroyed, and contributions levied upon the people. The troops appear to have understood that the city was to be given up to pillage, and for three days scenes of horror were enacted, such as the history of the English army has not often paralleled.

General Nott, at Kandahar, on receiving news of the massacres, blew up the citadel, destroyed everything not necessary for his final march, and started August 8, 1842, for Ghuzni, which he destroyed September 6th.

On the return to India, the walls of Jelalabad were destroyed, together with the greater part of that city; the fort of Ali Musjid in the Pass was blown up, and before the close of 1842, the invading forces had quitted Afghanistan, "bearing with them a load of tragical memories, the bitter fruit of an expedition unjust in its origin, and characterized through many of its stages by gross and fatal incompetence." The British were closely pursued even to the Indus, and by this hurried conclusion to the war, their prestige in Asia was lessened to an enormous degree. Finally, the Afghans had become bitter blood enemies of the English, and seeds of dissatisfaction had been sown among the native Indian troops which long after developed and bore bloody fruit in the great mutiny. To cap the climax of all this misfortune the utter causelessness of the war was declared by Lord Ellenborough, who relieved the unfortunate Lord Auckland. He said in a proclamation issued October 1, 1842, that "to force a sovereign upon a reluctant people would be as inconsistent with the policy as it is with the principles of the British Government."

So Dost Mahomed returned to his own, and ruled in Afghanistan over twenty years until his death in 1863.

The diplomatic history of ten years preceding the last Afghan war is of great interest, but time is wanting in which to consider even a *résumé*. The Anglo-Indian authorities were endeavoring by conferences, correspondence, bribes and threats, to maintain dominant influence over the Ameer, Shere Ali. The latter was dissatisfied with the price paid and promised for his friendship and subservience, and from being distrustful of English designs came to resent more and more any interference in his affairs from

that quarter, and to drift further and faster towards a Russian alliance. One great cause for alienation was the insistency with which the English forced a demand that their representatives should be received, not to be stationed necessarily at Kabul itself, but more especially at points on the frontier where they might keep careful watch for signs of Russian aggression. The Ameer bitterly opposed this project, believing not only that he would be unable to protect the English representatives from insult and injury, but that his subjects would see in this the hand of a master, and danger threatening to the boasted Afghan independence.

Effort was at the same time being made to induce Russia to acknowledge the right of England to exercise exclusive influence over Afghanistan, and to concede as neutral territory certain sections of Central Asia beyond the Afghan boundaries. Russia, while acceding to the former claim, would not consent in clear terms to the latter, but when during and after the Turkish war it seemed that she might be compelled to declare war against England or else forego the fruits of her hard earned victories, *then* Russia considered herself at liberty to feel the way toward an Afghan alliance, preparatory to a blow at English supremacy in India.

In consequence of English fears that events were tending towards such an alliance, Quetta had in accordance with treaty rights been occupied in November, 1876, by a detachment of Sikh infantry. Owing to the evident importance of this position in any difficulty with or concerning Afghanistan, a railroad has now been constructed to that point from the Indus.

About the middle of 1878, General Kauffmann, then Governor General of Turkestan, dispatched a mission to the Ameer. This was received with considerable pomp at Kabul, amid manifestations of popular approval. As a natural sequence a few months later an English mission started from Peshawar. This was forcibly turned back at Ali Musjid, the fort guarding the entrance to the Khyber Pass. This event occurring while a Russian mission was being entertained at the Afghan capital, was followed by sharp diplomatic demands and then a declaration of war.

On November 21, 1878, three armies of invasion set out for the Afghan borders, one to go through the Khyber Pass, the second by the route through the Kurrum valley, and the third to march on Kandahar, via Quetta.

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The Khyber column captured Ali Musjid after a short struggle and pushed on slowly toward Jelalabad.

The second, under General Roberts, met with considerable resistance, had to do some hard fighting in the passes, but pushed its way to a point only fifty miles from Kabul. It was unable to proceed any further unaided, and had to turn back. Finally, after some minor movements in the districts adjoining the route, it suspended operations for the winter and partially withdrew to a point just within the Indian border.

The third army captured Kandahar without resistance worthy of note, but the natural difficulties of a winter march through this rugged and desolate section were very trying. Ghirisk on the Helmund and the fortified village of Khelat-i-Ghilzai were occupied for a time. In the absence of serious opposition, a portion of this army soon retraced its steps to India.

There was necessarily very little if any concert of movement in the columns, but the usual evil results of this were not experienced to any great extent. The principal fighting forces of the Afghans once defeated by the Kurrum column, seemed to fail utterly to oppose any further systematic or concerted resistance. Several of the tribes still kept up a show of warfare, but the fighting was done in a scattered and hap-hazard way which was troublesome rather than dangerous to the invaders.

Shere Ali, hopeless of Russian aid, broken in health and spirits, seized with despair as to his powers of resistance, and finding that he could not rely on the loyalty of his own subjects, fled with his family on December 13 and sought security in the extreme north of his dominions, where he died in February, 1879. On his departure from Kabul, Shere Ali had turned over the management of affairs to his rebellious son. Yacoub Khan was unable, however, to bring about any well-organized resistance, but still delayed making terms of submission. He well knew that a concession of territory would be demanded, and this was a sacrifice exceedingly difficult to make, especially at this time while many of the disturbing elements were not under his control. The Indian government ordered immediate advance on Kabul as the only means of determining the Ameer in favor of a pacific policy. In consequence of this forward movement, a treaty was signed on May 26, 1879. One article provided for a British resident at Kabul, to be furnished with proper escort, and having power to send British agents to the Afghan frontier on special occasions.

The territory then occupied was to be restored with exception of the Kurrum, Pisheen, and Sibi valleys, which were to be retained and administered for a time, but were not to be considered as permanently severed from the limits of the Afghan kingdom. The British authorities were to have entire control over the Khyber and neighboring Michni pass, as well as the relations of the frontier tribes in the neighboring mountainous districts. In accordance with the treaty, Major Cavagnari was established at Kabul, but had only held his post for a few weeks when some Afghan regiments rising in revolt, he together with his staff and escort were savagely murdered on September 3, 1879. Yacoub Khan fled to India, avowing falsely his entire innocence and utter helplessness. The English forces were then pushed rapidly for Kabul.

Early in 1880, while the English were preparing to withdraw, a reverse was met with in the defeat by Ayoub* Kahn of a brigade † under General Burrows near the Helmund. The brigade was badly cut to pieces and completely routed, the remnants seeking safety by flight to Kandahar. Ayoub surrounded the city and for a time its capture was threatened, but General Roberts then made his celebrated forced march ‡ from Kabul, fought a successful and decisive battle with the Afghans, and relieved the garrison.

Abdurrahman Kahn, nephew of Shere Ali, who had been living in retirement in Tashkent, now made his appearance in Afghan politics, was formally installed as Ameer, and the British army withdrew.

With such a record of relations, is it to be wondered at that the English are not inclined to look with favor on any alliance with the treacherous Afghans. On the other hand, the Afghans have had no great cause for devotion to the English and their interests, considering that an unpopular monarch had been forced upon them in 1839, their country desolated with war in 1842, and again in our generation. While war with Russia was under consideration during the boundary dispute of 1885, the Ameer expressed at a conference the fear that the entry of British troops into Afghan territory would revive the animosities caused by the former wars.

* Uterine brother of Yacoub, who had been acting as Governor of Herat.

† 3000 men, including one European regiment and a detachment of artillery.

‡ 2800 European and 7000 Indian troops.

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Colonel Maurice, R. A., has stated in a recent publication* his opinion regarding an alliance as follows: "Undoubtedly, if the Afghans were a united people, who could be trusted to adhere religiously to contracts made by a central power, advance upon Herat would be a question of their friendship or hostility; but that is just the element on which we cannot count. The Afghans are in fact a congerie of fierce tribes who, no matter what bargains we had made with them beforehand, would be apt to break out in our rear after the first check we received in our front. Therefore, advance far beyond the Indian frontier becomes for us most dangerous. Our position there is strongest when it is strictly defensive."

About 1885, an English staff officer, exceptionally well informed, in an article published in an Indian paper, said: "After a long experience of Afghans, I feel bound to say that when Russia does make the great spring against India she will have all that race on her side, and substantiate what Lord Lawrence said, 'I feel no shadow of a doubt that if a formidable invasion of India from the west were imminent, the Afghans, *en masse*, from the Ameer of the day to the domestic slave of the household, would readily join it. Russia can promise and give her in case of success against us, far more than we can.'"

The Afghans evidently understand this well.

In 1885, Gemal-ed-deen, an Afghan patriot of education and note, was interviewed by a *Herald* correspondent. He said: "My countrymen all hate England and the English. They promise us everything and do nothing. They use us as their tools. The great misfortune of my countrymen is that they like fighting and will fight for whoever offers them best pay, but their latent hatred bursts into activity the moment a favorable opportunity occurs. My countrymen are all Moslems and never lose sight of a grand Moslem outbreak in India." It being stated that the Russians proposed to take Herat and a large slice of Afghan territory, he replied: "If Russia does that, you may be sure that she will give us compensation on our southern frontier. We have everything to hope for from Russian success in Central Asia, everything to fear from British success."

A few words now with reference to strategic points in Afghanistan.

Kabul, the capital, has a population of between 50,000 and

* "The Balance of Military Power in Europe."

60,000. It is not a fortified town, though it formerly had a wall, but is commanded by a citadel of considerable natural strength. At the time the capital was removed from Kandahar to Kabul, the Punjab was under Afghan rule, and was extremely difficult to retain due to insurrectionary risings. The present reasons for maintaining the seat of government here are that it is more retired and better protected by nature from capture than is Kandahar, and from it can be better overlooked and restrained the turbulent tribes of the Kabul basin, as well as the powerful tribe of Ghilzais; * also the Hazaras,† and the Khanates beyond the mountains. The approaches to Kabul from the north are over the passes of the Hindo-Kush, which range is a formidable but not impenetrable barrier to an invading army. Toward the east, the Suleiman range projects into the Kabul basin a rugged and formidable bastion of high rocky mountains and snow covered peaks. In this section are found the most stupendous and difficult passes ever attempted by any army, and still through them for thousands of years have ebbed and flowed the tides of Indian and Afghan invasion. It was probably through these very passes there came in prehistoric times a horde of hardy Vedic Aryans, going down to dispossess the aboriginal dark races of India.

While Kabul is a power in the hands of an Afghan ruler, in the possession of an invading army it is a perfect hornet's nest of turbulent, fighting crowds, and being so intensely Afghan can but be a weakness to a commander who wishes, not to govern Afghanistan, but to make Kabul merely one strategical step on the onward way.

Kandahar is a walled city, with twelve bastions and six gates. Although difficult to storm, it can be cut off from water, and is commanded by the neighboring hills. It is situated in a rich oasis, is a centre of communications, is not so intensely Afghan as Kabul, and is within easy striking distance of the English outpost at Quetta (140 miles).

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* The Ghilzais occupy the high plateau northeast of Kandahar, extending, roughly speaking, east to the Suleiman mountains, north to the Kabul River and down the Kabul to Jelalabad.

† The *Hazaras* and *Eimaks* are non-Afghan nomadic tribes, numbering about 400,000, occupying the wild mountainous country in the northwest, reaching from the upper valleys of the Argand-ab and the Helmund across the mountains into Turkestan. They cordially detest the Afghan government, and are semi-independent, only paying tribute when it is exacted by force of arms.

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On the main highway from Kandahar to Kabul are the fortified places of Khelat-i-Ghilzai and Ghuzni.

On the main caravan route connecting Kandahar with Herat, the fortified town of Ghirisk commands the usual crossing of the Helmund, and Farrah is strongly bastioned and amply garrisoned.

Herat has been considered by some engineers as impregnable if well defended, but the walls are entirely without flanking defenses, the interior is dominated by rising ground at the northeast angle, and the usual water supply is at the mercy of besiegers. However secure it might be made by large expenditures and the application of modern engineering principles, it is at present quite unfit to resist a European army. One step probably necessary to improve the defenses would be the erection of two independent forts on the adjacent high ground. In the matter of population it has had its ups and downs perhaps more than any city of its age, and history is unable to tell when Herat was not. It was one of the early Aryan centres of population. A Persian geographer has said with reference to it: "Fifty times taken, fifty times destroyed, and fifty times risen from the ashes." In ancient times it is known to have had 1,500,000 inhabitants. The ruins of the ancient city extend far beyond the present limits. When Jenghis destroyed it in 1232, but forty souls are said to have escaped the general massacre. Timour wiped it out again in 1398. In 1863, Vambery visited it soon after a prolonged siege, and the population was then reduced to about 15,000. It is said to be between 20,000 and 30,000 at present. The original inhabitants were Persians, and Vambery says that when he visited it, the citadel for the most part was occupied by Persian handicraftsmen and merchants, and these were not very friendly to the Afghans. Not more than one in five of the inhabitants were Afghans, and these had become quite Persianized and hostile to their own countrymen. The garrison of regular Afghan troops is usually not large. Herat is well connected by main highways with Persia, Turkestan and India. The surrounding valley is one of the most fertile in the world, and is cultivated like a garden. It can support beside its own population, an army of 150,000.

With reference to its strategical importance, the following opinions bear strongly. Colonel Valentine Baker said in 1874: "Herat has often and justly been characterized as the key to In-

dia. Its importance is thoroughly known and appreciated throughout the East, and there are few Asiatics who are not aware that England could never permit Herat to be held by any power which could actively menace our Indian interests." Capt. Holdrich, R. E., thought in 1880, that a threatening attitude toward Herat on the part of Russia, would be the almost inevitable reply to the use England made of Indian troops at Cyprus, during the settlement of the Turkish war. He says: "Should another such occasion arise, without attempting to discuss such a question as to the claim of Herat to be considered the strategical key of our Indian possessions, there can be no doubt that the constant reiteration of the cry that "Herat is the key to India" has had its effect on the minds of the natives of India generally, and the occupation of Herat, by a foreign power, would tend to disturb them perhaps dangerously."

The *Contemporary Review*, discussing this subject in 1886, stated as follows: "If any doubt exists in England as to the immense strategical advantage of Herat in an offensive sense, there is absolutely none in Russia. No one there questions the opinion of Skobeleff, Kuoropatkine, Tchernayeff, Kauffman, Sobeloff, Grodekoff, and other eminent generals, that it is the key to India, the great camping ground where an army of 150,000 men, with a broad-gauge railway at its rear running to the Caspian, and foreposts on the Helmund, would be able to exercise aggressive force difficult for us to withstand in our present position." There can be no doubt but that the possession of Herat by the Russians would be a severe blow to British prestige, and Colonel Baker has said: "Any one conversant with the East, must be aware of the extraordinary influence which prestige has over the minds and actions of Asiatics, and it is impossible to doubt that if British prestige were allowed to decline, the difficulty of holding India would proportionally increase."

MILITARY SITUATION.

The general situation of affairs is shown on the map. Merve is 240 miles from Herat and connected with it by good roads and low practicable passes. There are no physical obstacles to prevent the quick passage of a large force. Marvin says:—" * * the leading military men of England and Russia have long regarded Sarakhs and Merve as the two keys of Herat—the two points where troops could concentrate and rest before making their final

advance upon the key of India." At Merve can be established depots of supplies and troops collected sufficient for a *coup-de-main*, with strong outposts along the boundary line. In a few days after active operations are decided upon, the Russian advance guards will be "feeling" the passes to see if any considerable resistance is to be met with there. The chances are that Herat would fall without serious resistance and would gladly welcome the arrival of the "white caps." Then if Russia chooses, she can aid the Hazaras to cut loose from Afghan rule. Afghan Turkestan can doubtless be seized from Merve and the Oxus line without serious difficulty,, and then Russia could well wait to see what England is going to do about it.

English authorities are divided as to whether the attack on India should be met on her own borders or at some point in the Ameer's dominion. We hear no more in these days about an English seizure of Herat. The probabilities seem to indicate that to maintain prestige she would advance from Quetta to Kandahar (140 miles), take possession of the line of the Helmund, with a post at Khelat-i-Ghilzai, and there await developments. She would doubtless also gain complete possession of the important passes on her western border and fortify them. It would seem to be her best policy to avoid the northeast intensely Afghan districts.

Russia in complete possession of the great trade centre of Herat and of Turkestan might be content to hold fast, Russianize these new acquisitions, initiate intrigues with the petty feudatory princes of India and the Ameer, compel England to largely increase her permanent garrisons and fortify at enormous cost, entailing ruin on the Indian Exchequer. The special aptitude of Russia for assimilating the Eastern people, and rolling up her strength as she advances toward India, is acknowledged by her enemies as a real power and for India a real danger.

Russia seems also to be making an effort to turn Afghanistan and threaten India from the northern passes.

And now comes in one great advantage that Russia has over England. * "The whole resources of the state are at the disposal of the Tzar, before whom silently the facts which serve as motives for action can be laid. Year after year a policy can be steadily pursued, the results of which are only obvious when they are secured." On the other hand, in a country like England there is always a party of more or less strength opposing the

* Colonel Maurice.

ministerial policy, and it is always necessary for those in authority to keep the public informed more or less as to facts and motives in order to keep the public support.

As to their military policy, Col. Maurice says :—"Though we cannot safely advance upon Herat from India, it is vitally necessary for us to forbid Russia to possess herself of Herat, and the Heri Rud. Therefore it is also vitally necessary for us to put pressure upon Russia elsewhere than at Herat in order to protect Herat."

And now comes in the question as to whether England has or has not any European ally, and, if alone, as to what damage her fleet can do to Russia in the Black Sea, in the Baltic, and at Vladivostok.

It is evident that England has much to lose, and but little to gain ; a reverse to Russia means only delay for a time in her development. These questions we will not pursue. The events of the coming summer may enlighten us somewhat as to these problems which so interest these two mighty nations ; also the entire civilized world and much that is not so regarded.

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A SPECIAL SERVICE CORPS FOR THE QUARTER-MASTER'S DEPARTMENT.

By Lieut. E. F. LADD, R. Q. M. 9th U. S. Cavalry.

AN army is a body of men organized, armed, equipped, disciplined and provided with necessary means of subsistence, transportation and supplies of all kinds.

It is maintained primarily for fighting, but in this stage of civilization, its known fitness therefor is expected to deter the aggressions that would otherwise lead to war, and thus to preserve the peace in which lies the prosperity of a people.

"In peace prepare for war" is a principle followed in one way or another by every nation. With some this preparation consists in the maintenance of large standing armies, made necessary by the close proximity of jealous rivals upon all sides, or by the not unfrequent weakness of the ties that unite the several provinces or states. With this country, neither of the above necessities exists, and it would not seem a wise policy to take any large proportion of the producers among the population and convert them into consumers solely. Our policy of relying upon the Militia, National Guard, or Military Reserve, if not followed to the other extreme, would seem to be far more advisable.

In the last few years, our army has been largely occupied as an aid to the western progress of civilization, but the Indian problem would seem to be nearing its solution, and as we turn our attention from matters of local to those of national importance, many advances will be found advisable if not necessary. We cannot meet the new issues with the weapons which have solved the old.

A standing army, large in proportion to the area of our country, the number of its inhabitants, its wealth or its resources, is neither advisable nor necessary, and it is highly improbable that it ever will be authorized; then all the more reason why our organization and administration should, in every respect, be capable of ready and effective expansion or mobilization.

Any system fostered in time of peace, which is not capable of ready application in the stirring times of war, is worse than use-

less; for at the outbreak of war it not only becomes necessary to develop and master new principles and a new system, but also to eradicate the old, all under the most adverse circumstances and at a most trying and critical period.

An army is a great and complex machine, designed to meet certain emergencies; its usefulness will depend upon the ability of each of its many parts to perform properly its individual function.

The generals are the master minds that must so direct the work as to obtain the best results; they are assisted by various staff departments whose duties are clearly defined, and which must ever be ready to meet the demands of the unforeseen.

Among these is the Quartermaster's Department.

My experience has been limited to the small part of its duties which relate to the ordinary routine of camp and garrison.

Among these details of daily occurrence, a few may be noted which will help to illustrate the variety involved in this one branch of army administration.

In garrison, perhaps the most important of these is obtaining and issuing necessary and suitable clothing for the men. This involves combining the estimates of the company and detachment commanders, comparing the result with the record of issues for past quarters, allowing for the needs of recruits, considering the probable amount on hand at the beginning of the period estimated for, and then guessing at the result. All this not only as regards the articles and quantities of each, but also as to various sizes.

To illustrate,—in trousers, taking into consideration the different arms of the service, quality and sizes, one could have 150 pairs without having any two of the same kind and size, and the same, only in a somewhat less degree, with many other articles. And, to meet the needs of the men and requirements of the service, it is not uncommon for a Quartermaster at a post of this size and remoteness* to have on hand from twenty to forty thousand dollars worth of clothing alone.

The providing of all furniture needed in the barracks, such as beds, mattresses and pillows, tables, desks, chairs, benches, lamps and dishes for mess rooms, stoves, ranges and cooking utensils and needed repairs for them all, and providing companies with all needed tentage and equipage for field service.

*Fort Omaha, Neb.,—garrisoned by a full regiment of infantry.

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The obtaining and issuing and accounting for fuel, forage and illuminating supplies of all kinds, securing funds and material for needed repairs to public buildings, expending and accounting for same.

Issuing bills of lading for freight, and transportation requests for authorized persons travelling under orders, not knowing whether a straight line is the cheapest route between two points, or the longest way around the cheapest way home, but with the pleasurable conviction that the auditor will tell you if your calculations are wrong.

The duty of keeping in order and readiness for field service everything pertaining to field transportation is very important at frontier posts. This includes mules, wagons and harness, horse and mule shoes and nails, iron, leather, canvas and all spare parts for repairs, necessitating the employment of wagon and stable masters, teamsters, farriers and blacksmiths, and paying all these men, reporting their services, and accounting for the funds.

Then come all the records, reports and returns of public property and the correspondence involved in keeping track of and carrying out the property accountability of the above, as well as many other details that mark the daily routine of the Quartermaster's Department of a post.

The above enumeration is simply to show that there is work connected with the proper administration of affairs in the Quartermaster's Department of a post, and that several men are required to carry it out. At this post there are working under charge of the Post Quartermaster, 38 enlisted men and 7 civilians, whose duties are almost as various as their numbers, and not one of them in the least allied to the profession of arms. Why then should they be expected to be soldiers in the ordinary sense, and be counted as such in the enlisted strength of the army?

The present system is conducive to the following state of affairs: Men detailed on extra duty are largely removed from the immediate control of their company commanders. They usually omit many of their military duties and frequently attempt to evade others, to the detriment of discipline, by conveniently being with the company when wanted by the quartermaster, and vice versa. The men also fail to render the best service to the department in which they are employed, for the carpenter must drop his saw, the painter his brush, to attend drills, inspections and dress parades, or to draw clothing, and instead of the 8

hours prescribed by law and orders, the department does not receive upon an average more than 6 or 7 hours' service each day. Instances are frequent where men have received conflicting orders from sources, both competent, and have thus been placed in a position where one of them must be disregarded, perhaps at the expense of a court-martial.

It is not uncommon for a recruit who may be a good carpenter or painter, to receive more pay per month than his first sergeant who has served perhaps 25 years, a condition of things not calculated to promote contentment or discipline.

And, within the last year, it has been the experience of this post that when the troops were sent into the field, and it became necessary to raise them to effective strength, all soldier teamsters, most of whom had been with their teams two or three years, had to be replaced by civilians, employed with a few hours' notice, who were not efficient and who could take but little interest in their duties, and most of whom were shortly replaced by soldiers, the change being necessary for the interest of the transportation and the service.

What would be the condition of the Quartermaster's Department in case of active operations?

The extra duty men would all be required with their companies, the strength of companies would be increased, the skeleton organizations resurrected, new regiments formed, militia mustered in, and all moved to the front, eager to put in practice the theories of years of study and discipline, while the important work of clothing, feeding, equipping and transporting supplies would of necessity be largely left to undisciplined and inexperienced men.

The importance of this work is often forcibly presented to us in our ordinary garrison life and duties; the necessity for its intelligent and efficient performance in active military operations can not be overestimated.

To meet emergencies, the line has simply to complete the structure whose foundation and framework are the result of years of labor and discipline, leaving the Quartermaster's Department with nothing but unseasoned material with which to build.

Under the system to be proposed, such a state of affairs would be impossible.

It is therefore claimed that the present system is destructive of discipline, a promoter of dissatisfaction, conducive to work

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poorly done both as soldier and mechanic or teamster, and is not applicable in time of war. That the good of the service demands that it be abolished, especially because there seems to be a practical and economical remedy.

In an article in the Military Service Institution, Colonel Anderson says that one of the potent causes of dissatisfaction among enlisted men is undoubtedly the extra duty system of carrying on the work of a post. He gives as the reason for this that very often the *other* men, not given extra pay, do the *extra* duty in additional work imposed on each owing to the diminished number of men available for the necessary daily routine of guard, stable duty, kitchen police, general police and various fatigue details, not to mention the frequent exemption of extra duty men from hot, monotonous and wearisome drills which other men are required to stand. That this is not without foundation none acquainted with the practical workings of the system will contend.

The following is taken from the report of the Adjutant-General for 1892.

"The concentration of troops in larger posts reduces somewhat the number withdrawn from military instruction to render service as extra duty men in the several staff departments. The effect of such details cannot be otherwise than harmful to the efficiency of the army, and the duties assigned them can be more economically performed by civilian employés or by detachments of men enlisted and trained for the purpose."

"The Hospital Corps, organized in accordance with the act of March 1, 1887, and the corps of mechanics and laborers authorized to be enlisted at the Military Academy, have more than fulfilled the expectations entertained with regard to them at the time they were established. The result has been to provide an efficient service in both departments, to remove a cause that has been productive of no little annoyance to company commanders and medical officers, and restore to military duty a considerable number of enlisted men."

"I suggest that the system, for it is no longer an experiment, be extended, and that a suitable corps of enlisted men be authorized for and attached to, the Quartermaster's and Subsistence Departments, to replace the force of enlisted men now performing duties which are neither military nor beneficial to those engaged in them in any military sense."

"The returns show that about 1500 non-commissioned offi-

cers and privates are now detailed from their companies and withdrawn from their proper instruction, and assigned to classes of work which could be done much more economically and efficiently by a corps of specialists enlisted for the purpose. The effect would be to return to the ranks a force equal to two regiments of cavalry or artillery, or three regiments of infantry of more than average size. The practice here recommended has long been made part of the established military policy of European armies, and has been resorted to by them, in every case, with a view to a more efficient and economical administration. I need only add that the adoption of special service corps has invariably been attended in our service by a considerable increase in efficiency, and a marked reduction of expenditure."

The idea of a service corps is not a new one, but the attention of Congress has so often been called to measures purporting to be for the best interests of the service, but which, upon careful examination and analysis, have proved to be so manifestly personal in their operation, that it is not to be wondered that some true and needed reform like the one under consideration, should be passed over unnoticed. But supported, as I believe it to be now, by every officer of experience in both staff and line, from the General of the Army down, it can be but a short time before needed relief will be granted in one form or another.

As to the exact organization of the service corps under consideration, various suggestions have been made, but, whatever be the one adopted, I would make it as simple as possible, consistent with efficiency; and to embrace all men, both civilians and soldiers, now employed in the Quartermaster's Department at posts and depots, except the regimental quartermaster sergeant, and a few men, such as guides and interpreters, chief clerks, draughtsmen, etc., working under regular quartermasters. The regimental quartermaster sergeant should be retained as chief clerk to the regimental quartermaster, being the one man always available and needed to keep track of the papers; the others, for the peculiarly responsible positions which they fill.

As a military organization, necessity would suggest that all men vested with authority should be non-commissioned officers. I would say sergeants, the post quartermaster sergeant to be, *ex officio*, first sergeant of the detachment. All others to be privates, divided into as many classes as necessary, with pay graduated to correspond relatively as nearly as practicable with the value of

the various services in civil life. All to be enlisted under the same general regulations as other soldiers, with rations, clothing, continued service pay, etc. The post quartermaster sergeant with rank and pay as at present. The privates, I would divide into 4 classes; the first class to embrace such men as are now employed as forage-masters, clerks, transportation agents, etc., with pay of $45.00 per month. These men ordinarily work under the immediate direction of the quartermaster, and their rating as to pay is not too high. The second class to include the sergeants, except the post quartermaster sergeant, blacksmiths, wheelwrights, engineers, plumbers, etc., with pay of $35.00 per month. The third class to include skilled laborers, such as carpenters, painters, tinners, masons, assistant engineers, etc., with pay of $27.00 per month; and the fourth class to include ordinary day laborers and teamsters, with pay of $20.00 per month, the pay as above to be for first enlistment. All to be suitably uniformed and to have a separate barrack.

I would further recommend that vacancies be filled as far as practicable by transfer from the line, upon the approval or recommendation of the post quartermaster and commanding officer, of men with over five years of service, or of men of good character, previously employed on similar duties in the Quartermaster's Department. I would also have as one condition of transfer or enlistment, that, in case of incompetency in the duties assigned, the man should be transferred to the line, or to another class, by an order of the War Department based upon the man's own application, approved by the post commander, or upon the recommendation of the post quartermaster and post commander, for satisfactory reasons to be stated. It would not follow that a man found undesirable for some particular work, would not prove an excellent man for some other class, or for company duty.

So far, this change has been advocated solely upon its desirability and for the contentment, discipline and efficiency it will produce both in the line and staff, and the question of cost has not, neither should it, enter into the discussion; but should Congress be asked to afford us the desired relief, it would be one of the first questions to answer, so I will now consider the proposed system solely from a pecuniary standpoint.

For this purpose, I have obtained statistics from twenty-five of the largest posts on the frontier, where the extra-duty system prevails to the greatest extent, these statistics being based upon

the expenditure for labor in the Quartermaster's Department for the last fiscal year.

In the computation to follow we will consider a soldier's pay at $13 per month, and that of men in the proposed Quartermaster's Corps as that of their first enlistment, since the continued service pay and allowances of the two systems would be the same, except for civilian employés, for which correction will be made later.

At these twenty-five posts reports show the number of men employed and their monthly compensation to be as follows, assuming the classification proposed above:

Of the 1st class 16 men, pay	$1,288.33
Of the 2d class 113 men, pay	7,441.03
Of the 3d class 130 men, pay	1,430.00
Of the 4th class 541 men, pay	8,080.30
Giving a total number of 800 men with a monthly compensation of	$18,239.66
To which add pay of 671 men who are soldiers at $13 per month or	$8,723.00
Giving a total of	$26,962.66

With the proposed system, the cost of the same number of men, classified as above, would be as follows:

16 men of 1st class, at $45	$ 720.00
113 men of 2d class at $35	3,955.00
130 men of 3d class, at $27	3,510.00
541 men of 4th class, at $20	10,820.00
A total of	$19,005.00
To this add clothing allowance of $4 per month to the 129 citizens included in the above or	$516.00
Also rations at $6 per month for the 13 men above who now receive over $60 per month or	$78.00
And we have	$19,599.00
A saving each month on this force of 800 men of	$7,363.66

Assuming that that there 2400 men of the above classes so employed in the entire Quartermaster's Department, which figures I should judge to be nearly correct, then at the above rate there would be a total saving each year of $265,091.76. Moreover, if these men could devote their entire attention to the duties assigned them, their number could be materially reduced from the present figures.

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That I may be clearly understood, let me state definitely how this saving can be effected, while the efficiency of the line is preserved and that of the Quartermaster's Department increased. It can be done only by reducing the enlisted strength of the line by the number now detailed away to man the Quartermaster's Department. This is practically what results now, for men so detailed are a handicap rather than an assistance to the organization to which they belong. But, to any fair minded man, what is the occasion for reducing the enlisted strength of the line? What is the occasion for this economy? Why not give the needed relief to both line and staff, placing all on the same basis of efficiency as obtains in other countries? Then when mobilization becomes necessary, or even in case of ordinary field service, we shall have independent organizations, each ready, equipped and experienced, to meet any demands made upon it.

The above explanation is deemed necessary as it might seem to some that the absurd argument was advanced, that the army could be increased by a Quartermaster's Corps of 1500 or 2000 men at a reduction in cost of over $200,000, whereas the figures prove simply that the present is an extravagant method of conducting the work of the Quartermaster's Department, and that the work can be done much better and more economically by men enlisted in this special corps. The extra men added to the enlisted strength of the army, would be just this much of an increase to its effective strength, and an advance in the right direction.

In the above discussion, I have assumed a classification which I believe advisable, and rate of pay, which, under the many favorable provisions proposed, I am satisfied is ample to insure good workmen in the various trades. But, upon these minor points there are likely to be varied opinions, and I would gladly give way to those of greater experience.

To solve the problem in detail, I would propose an act of Congress similar to that establishing the Hospital Corps, creating a special service corps for the Quartermaster's Department, the strength of such corps in time of peace not to exceed 60 men for each regiment in the service, to be divided as follows:

For each regiment, not to exceed two quartermaster sergeants as at present, 3 men of the 1st class, 10 men of the 2d class, 15 men of the 3d class, 30 men of the 4th class, provided, that if any class is not filled, the number so lacking may be added to any lower class.

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This would give a maximum monthly pay-roll for each regiment of $1558, or for the 40 regiments in the present organization of the army, $62,320.

The report of the Adjutant-General for 1892, quoted above, gives the number of men on extra duty at about 1500. From the report of the Quartermaster-General for the same year, the average monthly extra-duty pay of these men was $17,533.80 and their pay as soldiers, at $13 per month, was $19,550, making their total pay $37,083.80.

Now add the pay of 80 quartermaster sergeants at $34 per month each, or $2720, and we have a total of $39,803.80 as the present monthly cost of soldiers employed in the Quartermaster's Department, all of whom could be embraced in the Special Corps.

Now take the same report of the Quartermaster-General, omit all civilian employés now receiving $85.00 per month or more,—which includes all clerks, draughtsmen, chief packers, nearly all transportation agents, and some engineers and forage masters, who are men peculiarly adapted to their specific work, 257 in number, whose monthly pay is $28,501.13,—and we have 912 civilian employés left whose monthly pay is $51,696.02 which added to the pay of the soldiers employed as above makes a total of $90,499.82 as the monthly wages of the 2412 men included in this computation, all of whom, I am satisfied, could in a short time be replaced by men equally, if not more competent, enlisted under the assumed conditions, and at a saving of $28,179.80 each month,—more than equal to the pay of the 1500 enlisted men now detailed away from their regular military duties.

In other words, this special service corps of 2400 men could be created under the condition assumed, leaving the strength of the line as at present, and the monthly pay roll of the army, including the 912 civilians, be reduced $8,629.20, a revelation based upon figures, and as surprising to me as it will doubtless be to others,—a result even more favorable than the one deduced from the statistics of a few posts, made before the report of the Quartermaster-General was available.

A slight correction is required here to cover the clothing allowance and rations of the civilian employés, also for the twelve men in excess of the 2400 proposed, but after making all corrections, there will still be a net credit on the side of the proposed system.

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The assignment of these men to departments and posts would devolve upon the General of the Army and department commanders, upon the advice of the Quartermaster-General and chief quartermasters. The proposed number of 2400 men would give an allowance of 4 to each post and 4 to each troop or company in the service, including bands, and leave enough for duty at department headquarters, depots, etc.,—an allotment in every respect liberal, but which would be varied to meet the demands of the service.

These 2400 men would soon become skilled in the duties assigned them, and more or less acquainted, in a general way, with most of the duties of the Quartermaster's Department. Then, in case of active operations, they could fill the more important positions, and the department never feel the lack of a competent and experienced force.

PRACTICE VERSUS THEORY IN ARMY TRAINING.*

By Lieut. E. H. PLUMMER, 10th U. S. Infantry.

THE military profession and the duties of a soldier are eminently practical. They are such as require in their proper performance the exercise of the greatest breadth of mind, quickness and sureness of judgment. The studies of the profession should be such as to develop breadth of mind, to build up and build out the mind, and the training of officer and soldier should be eminently practical.

It is a weakness of mankind to theorize and there is much danger of theorists becoming blind to the practical necessities of life. This danger is especially great in the military profession, in time of peace. It is the purpose of this paper to invite attention to this danger and to suggest some methods by which it may be avoided in the training of our army.

The people of this country are eminently a practical people and history shows them to be preëminent in warfare, whether with civilized or barbarous peoples. The varied conditions under which they have engaged in warfare, during their comparatively brief existence, are unparalleled in the history of any nation. First, the long arduous struggle for liberty, fighting a mighty foreign foe on native soil; again, with the same foe, maintaining their rights; later, with a neighboring, but foreign foe, on foreign soil; and more recently, engaged in a long, terrible domestic strife, fighting native foe on native soil, continuously struggling with native barbarous tribes, overcoming their resistance to the demands of civilization, ultimate success crowning their efforts in every instance. This unvaried success has been due, undoubtedly, in a great measure, to the eminently practical and broad minded character of the people, developed by their severely practical lives and varied experience in the establishing, developing and maintaining a new country, the "New World," as it is very appropriately termed.

If we wish to secure a continuance of this heretofore unvaried success in warfare, we should so arrange the system of education

* Read before the Officers' Lyceum at Fort Marcy, N. M., February 28, 1893.

in our military establishment as to develop to the highest degree those broad and practical qualities of mind proverbial of Americans generally, and especially of those Americans who have shown themselves preëminent in warfare. The names of Washington, Lincoln, Grant and Sherman are almost synonymous with broad, practical common-sense. In connection with what follows attention is here invited to the fact that at the outbreak of the Civil War Grant and Sherman were struggling with the varied experiences of civil life, and just as surely developing that breadth of mind and excellence of judgment which gave them success and renown in warfare.

While this paper was in the course of preparation I read in a novel, the scenes of which were laid a few years after our Civil War, the following words, "I did not know, however, that Americans were ever unpractical," and in reply "I came from the South where practicality is scarcely the predominant national virtue." In view of the result of that war the words are suggestive of a confirmation of the theory of our unvaried success in warfare.

The training of the regular army, in time of peace, should be such as to make it, as nearly as possible, a perfect national military school. Until recently the majority of the officers of the regular army had received, during the Civil War, practical experience in campaigning and fighting which would have proved invaluable to the country had another war occurred soon thereafter, and did serve to give to those entering the service after the war, a training based on that experience; it was given, however, so quietly and unobtrusively that it has not been duly appreciated. The conspicuous absence of technical text books from this source is strongly suggestive that their experience led these veterans to believe that theories and books cannot make efficient or capable officers. They realize fully that the fortunes of war are as fickle as the weather. Science can accurately predict the position, years hence, of bodies in the solar system, but a scientific prediction of the weather twenty-four hours hence is only termed "probabilities."

"Nothing less than infinite wisdom can have an absolute command over fortune: The highest degree of it which man can possess is by no means equal to fortuitous events, and to such contingencies as may rise in the prosecution of our affairs." This is particularly true in the campaign and on the battle-field, where so

much depends on the decision of the hour. Unforeseen, unavoidable contingencies arise to modify or change plans decided upon as best and practicable, into impossibilities, and perhaps necessitate the conception and development of entirely new ones. For a man to be able to apprehend and use to the best advantage these contingencies it is necessary that all the faculties of his mind should be developed to the highest degree.

It is now nearly thirty years since the close of our last war, and should another occur in the near future we can scarcely expect that many of the experienced veterans of the Civil War will be able to go into active service. This fact, together with the condition of affairs in our country which will make it necessary, in the event of a war, to raise, train and put armies in the field by one general order from the War Department, makes it all the more necessary that all training in the existing military establishment (which must be the leaven of the large loaf) should be as near akin to that of active service as possible, practical in every detail and so arranged as to develop to the utmost the capacities of all those trained.

The way to develop and improve the general intelligence and reasoning power of an individual is by observation,—by an alert, intent and accurate use of all the senses.

Many persons believe that great generals are born, and that the faculties for transacting business are the gift of nature, when really the results observed are due to education, assiduity and experience.

> "Though nature weigh our talents and dispense
> To every man his modicum of sense,
> Yet much depends, as in the tiller's toil,
> On culture, and the sowing of the soil."

If soil be planted continuously with the same crop it will soon fail to yield a worthy harvest. Exclusive professional training will just as surely produce a mental narrowness.

To bring the mind to full perfection it must be cultured. Culture here implying strength, sureness and flexibility of mind, and the development of all its faculties to the highest possible degree; so that it can be concentrated at will on any subject, and enable a man to distinguish what he knows from what he does not know, what he can do from what he cannot do. Milton says that it fits him "to perform justly, skillfully and magnanimously all the offices both private and public of peace and war." General cul-

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ture prepares a man to receive or acquire readily the special knowledge of any profession.

It is generally conceded that the Germans, at present, lead the world in the excellence and proficiency of their trained military establishment. It is said of them that "their sound judgment, based on war, has triumphed over the exaggerated speculations of technicalists, and they carefully avoid sacrificing to any formal idea, the very diverse factors which occur in war, and guard against the fault of pushing technical speculations to their utmost consequences." The present position was attained and the nation raised from a fourth to a first military power through a thoroughly practical system of military training, founded on experience, and in which the basis of intellectual training is liberal breadth and development of the general intelligence. It is considered essential of a thoroughly educated German officer that he be well informed on all subjects, and to that end liberal and general studies are pursued by officers of all grades and classes.

Notwithstanding all modern improvements in arms, armament and explosives, victory of armies, in future wars, will depend, more than ever before, on strength, precision and flexibility of intellect of commanders, and rapidity of movement of men and supplies.

To handle and supply an army of a million of men requires business qualifications of the highest order. Every officer of our army should be competent, and prepared, to perform such duty but the lack of general business knowledge of officers of our army is almost proverbial among persons outside of the service; and it is not unfrequently boasted of by officers themselves, or given by them as the reason for their being in the army.

An instance, illustrating the views of those outside of the service, was forcibly, if somewhat unpleasantly, demonstrated recently to an officer who was studying law. Upon being questioned by a friend as to the advisability of "wasting" his energies in that way, innocently replied that, among other advantages, it would be a pleasant, and perhaps, profitable employment after retirement. The decidedly incredulous and somewhat sneering look on the friend's face was observed by the officer and an explanation of it asked for, which was given in words to this effect: "Well, it seems ridiculous to me to think that an individual of any sense would trust his business affairs, especially legal matters, to a man who had spent the best part of his life in the army."

It is very much to be regretted that there is good ground for such an opinion, and more still that there is nothing in the system of our military training to improve such a condition of affairs. There undoubtedly should be. In the performance of the duties of the positions which any officer may be, and most of them are, called upon to fill during their careers, even in time of peace, there is scarcely a profession, trade or line of business of which it is not essential that they should have some knowledge.

In the training of our army we have two general classes of recruits to consider,—graduates of the Military Academy and new enlistments for the ranks. It is not necessary to consider, as a class, either those promoted from the ranks, or those appointed from civil life to commissions. If a system of training similar to that herein suggested were adopted, the first of these would have the necessary training both before and after promotion, and for the others the training, to be thorough, should comprise all prescribed for both general classes.

We have the best Military Academy in the world. It will not be questioned that it has made, and continues to make, thoroughly good soldiers; and here it is to be noted, what very few persons know, or realize if they do know, that there is very little technical theoretical training done at our Military Academy. Theoretical instruction in tactics, strategy, campaigns, military theories, etc., is not given at all until the third and fourth years of the four year course, and during the time when those studies are being pursued, the time devoted to recitations in them is only about one-fifteenth of the whole time devoted to recitations. It is very certain, however, that at the end of the second year, before these studies have been commenced, the training of the cadet as a soldier has progressed rapidly and most satisfactorily.

The graduate of the Military Academy is, by four years of general culture, prepared to receive or acquire readily and rapidly the special knowledge of any profession or business. His military training thus far has been, chiefly, that of the soldier in the ranks. In the event of war these men should all become regimental, brigade, division and army commanders, or the staff officers of the larger commands, and it is for such duties that they should be trained after graduation.

For this general class of recruits it is therefore suggested that the system of training be somewhat as follows.

Within thirty days after joining his station every officer to be

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sent out with a detachment, or company, for a period of from ten to thirty days. Within sixty to ninety days after returning from the first trip to be sent out again, remaining out from sixty to ninety days, and so on until each has had at least twelve months field duty in command of a detachment, company, or companies. This to apply to all graduates of the Academy, regardless of the branch of the service to which assigned. The experience thus gained will give an otherwise unobtainable, practical knowledge of men; managing, supplying, caring for and handling troops; of procuring, handling and caring for supplies, and will develop necessary judgment and self-reliance. It should also create a craving for a better knowledge of how to perform these duties, which will be obtained by a study of the experience of others. Following this instruction, officers should be required to make a thorough, practical study of agriculture, in its various branches; such as, where and how the staple articles of food, especially those comprising the ration, are raised and prepared for market, how and where the best may be obtained, and how to distinguish the best of its kind; where the best horses and mules are raised, how to judge and how to obtain them. Railroads should be thoroughly studied, their construction, maintenance and management, and the transportation by rail of freight and passengers. Other methods of transporting should also be studied. Building construction should be thoroughly studied. All kinds of factories should be visited and especial attention given to the manufacture of and the material used in all kinds of clothing, equipage, equipment and vehicles. A detail of officers should be kept in foreign countries, especially Germany, France and Mexico, to learn the language, being required to show a very fair degree of proficiency in speaking and writing it, after returning.

A great deal of the work outlined might be accomplished by having as many officers as possible visit the Columbian Exhibition, requiring them to submit a general report or journal of their daily observations and a special report on any subject or subjects to which they might desire to devote particular attention.

In the training of enlisted men it is suggested that all recruits be sent to their regiments, companies or stations as soon after enlistment as possible. Direct from the rendezvous whenever practicable. The present system of accumulation and retention of recruits at the general depots is detrimental to the best interests of the service and should be abolished. The conditions of

soldier life at one of the present depots and at a frontier post are extremely different. The leap from six months theoretical soldiering at a depot, to practical soldiering in a company at a frontier post, causes much discontent and many desertions. The training of this class of recruits should commence with six months' service in garrison with thorough instruction in discipline, drills, guard duty etc. This to be followed by training in and for field duties, the instruction being graded as in drills proper; beginning with preparation for a march, arrangement of clothing, equipment, etc. to be taken, and of that to be left in the post. Then should follow a day's march. Then a march with the night spent in camp, and so on until the soldier thoroughly understands how to prepare for a march, for a campaign, how to march, how to camp under the various conditions of climate and weather, and is able to teach others how to do the same. The soldier should then be taught how to attack and fight a foe, how to defend and protect himself when attacked by a foe. Trailing should be thoroughly taught. With human beings this is simply a question of acuteness of observation thoroughly developed, and there is no excuse for the white man depending on the Indian scout to lead, or more frequently mislead him on the trail of hostile Indians. To aid in the cultivation of this faculty of trailing, as well as for other benefit to be derived therefrom, hunting should not only be encouraged but should form a part of the soldier's training.

It is further suggested that a premium should be offered, in the way of a considerable increase of pay, for the reënlistment of soldiers discharged with a character "Excellent in every respect." Make the term of the worthless ones as short as possible, but to make our leaven for the large loaf what it should be, we need such soldiers, and as many of them as we can get. Such soldiers as are not and cannot be made in a short term. Instant, implicit, unquestioning obedience, the prime essentials of a soldier, are only acquired by the constant practice and training of years, until they become a very part of the man, as they must be of the perfect soldier.

The end to be sought in the training of our army should be to make and keep as many such soldiers as possible; to have so trained those leaving the service that they will, in case of need, prove to be ready, well trained volunteers; and to so educate the officers that they will be able to perform intelligently, efficiently,

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and in a thoroughly practical manner all duties which may devolve upon them in peace or war.

Noting the number of officers who were in the regular army before the late Civil War but who passed through that war rising only by regular promotion in their regiments or corps, one is led to believe that they were not properly prepared to fill the higher positions, which they naturally should have filled, in that time of rapid development of large armies, where special professional knowledge was invaluable, but practically valueless unless accompanied by other qualifications just as necessary in organizing, handling and leading armies. The dull routine of army life, together with exclusive professional training, had produced a mental narrowness, an incapacity for that full exercise of all the mental faculties, flexibility of mind, quickness and sureness of judgment that a broad liberal training is sure to produce, and which is so very necessary in warfare.

It is related of President Lincoln, that in considering whether or not to commission, as an officer in the army, a young man who had distinguished himself on the battle-field as an efficient, practical leader and conqueror, but on whose qualifications an examining board had reported adversely, the President said: "It seems that this young man does not know the technical name of the work which he had horse sense enough to capture, but a little more horse sense is very much needed in the army just now," and the commission was issued.

A long "time of peace" is upon us, and the regular army is drifting back to the condition it was in prior to the Civil War. There is, perhaps, more energy devoted to professional training in the present, but when a novelist of the day may say, unquestioned and unrebuked, of his character of a retired colonel, that "he left the army ignorant of business" our army is not trained as it should be.

To adopt and maintain a system of practical, liberal training, as suggested, requires no new legislation, no additional appropriation, no change of organization. It matters not whether the regiment consist of three battalions or six; whether there be one skeleton company or four. Material of the very best quality is in our hands. If we do not make of it, rank and file, an army worthy, in every respect, and at all times, of our great country it is not the fault of the material or the shape of the shop but of the moulders and their moulding, of the system of "Army Training."

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Comment and Criticism.

(The remarks under this head have, generally, been invited by the Publication Committee, which desires that, as far as practicable, these "Comments" should appear under authors' names.)

I.

"Army Organization."

1st Lieut. Sidney E. Stuart, U. S. Ordnance Department.

NOT the least of the motives that lead me to make this rejoinder to some of the comment and criticism of the competition essay on Army Organization that has appeared in the JOURNAL is the opportunity it affords for the elucidation of some points in respect to the system proposed in the essay that would appear, from the nature of some of the criticism, not to have been made sufficiently plain therein.

I think it is demonstrable that Lieut. Birkhimer is altogether too sweeping in his principal criticism, which may be, I think, fairly set forth as follows: The "premises, with every respect, are fatally erroneous"; the premise is essentially incorrect that states that "we are now at a turning-point in the stage of affairs in respect to those most important conditions of army organization, conditions that go to the very foundation of its efficiency and success"; there is "nothing in our present condition which, properly considered, affects the question at issue and which has not existed from the beginning of the government"; and "the military conditions of this country are essentially the same to-day that they have always been."

Certainly our army is passing out of a stage in our military conditions in which the character of its service has been controlled by the necessity of using it as a police force on the frontier, and into one in which its principal function will be the preparation of a defense against foreign attack, for the performance of which duty it is thereby set free. And as certainly, the reserve of men trained in the Civil War, which has since that war relieved the army of the necessity of making special provision for the prompt formation of volunteer armies, has now all but passed away, so that this duty now devolves again on it. Are not these self-evident facts? And are they not as palpably the essential elements of our military condition, the conditions that have principally determined the use of the army in the past and that set its duty and opportunity for the future? They *must* enter into any proper consideration of a suitable organization; and they have never before co-existed in our history. Indeed, Lieut. Birkhimer admits the existence of the turning-point in arguing that the release of troops from duty on the frontier should inaugurate a system of administration not heretofore possible. Whether these conditions warrant or demand a change of the organization, as I maintain, or only a change in the manner of administration of the present one, as Lieut. Birkhimer holds, is a conclusion of the argument of the essay, not a premise; and the "logic" is admittedly "correct."

But though contending that the proposed system, once put into successful operation, would be better suited to our needs than the present one, I freely admit that

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the possibility of making it yield the results ascribed to it is not yet demonstrated. I believe that it could be made to work successfully, and think that the degree of success attained in the national guards of some of the states warrants this belief. That the soldiers of the supplemental and reserve classes would not be so free from the suspicion of "tin" as the regulars of the present system goes without saying. But, on the other hand, they would be probably of higher average intelligence, and the far greater number that could be trained and maintained with such appropriations as can be obtained from Congress may reasonably be assumed to more than offset the difference in quality. We would not be loaded down with the burden of over-topping rank so destructive, as Col. Gilchrist well says, to efficiency. The question can be satisfactorily settled only by an experimental trial of the plan, a step which, I regret to say, seems to be less promising of realization than success.

How, it is asked, is the system to be applied at "Fort Warren, Fort Hamilton, Fort Delaware, Fort Monroe, Fort McPherson, Key West, Tortugas, Fort Barrancas, Angel Island, Alcatraz Island, Fort Canby, Fort Snelling, Fort Sheridan, Fort Riley, and many other places"? Let me first say that the proposed plan does not contemplate the reorganization of the entire army—there will always be a necessity for organizations composed entirely of the nucleal class at service schools of practice, and at all such posts as must be garrisoned in peace but are not in the vicinity of large settlements. Nor is it essential that the drill-armories should be those already in existence.

The troops intended for the defense of Fort Warren and the other fortifications of Boston Harbor would receive their evening instruction at Fort Independence, to and from which they could be readily transported by government boat or by contract. Such guns and other material as would be needed for this purpose could be temporarily placed there, to be removed to its proper permanent place when war should threaten. The summer out-door drills might be held there or at the fortifications, as should be found most expedient; probably some at each. The period of encampment should be spent at the fortifications. At New York a similar plan could be followed, using Fort Columbus as a drill-armory. Fort Delaware is too distant from Philadelphia to allow it to be used, except for the encampment; in this case the drill armory should be established near the city, say at the Schuylkill Arsenal. Alcatraz Island could be its own drill-armory, or it might be placed at Fort Mason, which would also do for the other fortifications of the harbor. The fortifications at all these places might, if desired, be made the stations of the nucleal part of the batteries intended for their defense, details from them being sent to meet the other classes at the armories on drill nights.

Fort Monroe, and other fortifications near the mouth of the Chesapeake, would be used for the summer encampment of their garrisons, but the drill-armories would be at the cities where the troops would be raised—say at Fort McHenry for Baltimore, Washington Barracks for Washington, and one of the various government reservations at Norfolk for that city. Similar plans would be suitable for Forts Barrancas and Canby. Key West and Tortugas could not even be used for the encampment of the reserve portion of their garrisons. This part would have to be recruited and drilled at other places, in excess of their own quota, and such garrisons as they require in peace would have to be entirely of the nucleal class. These posts are, however, exceptional in situation. The other posts mentioned need not be garrisoned if it cannot be conveniently done; they are only garrisoned now because they are convenient places for garrisons, not as necessary points of occupation for protection against foreign attack.

The plan of regimental organization for the infantry mentioned in the essay, while suitable for large cities capable of maintaining an entire regiment, might, perhaps, be varied with advantage to adapt it to smaller places. Thus, instead of connecting the

training companies in a single battalion, one or two companies of each battalion might be organized as training companies, the others constituting the corresponding reserve companies. Battalions would thus be rendered more independent as to location, and only so many stationed in each place as it would support. A battalion would require about 350 men of the supplemental and reserve classes to keep it full, which ought to be readily furnished by a city of 50,000 to 75,000 inhabitants. The census of 1890 gave us 58 cities of a population of over 50,000 and the number is fast increasing.

The plan does not propose to do away with volunteers; nor is it essential that we should be able to determine beforehand how many of our trained men would prefer to enter the volunteers and how many the regular organizations. In either they would be useful—and more useful in the volunteers than in the regulars, after the necessities of the army of the first line had been met. And this army would always be secure of all borne on the rolls at the outbreak of war, for they, at least, would have no choice between regulars and volunteers. In both branches alike would they be "officered by their friends and neighbors"—in the companies at any rate—an advantage of the proposed plan that might be hoped to materially facilitate recruiting for the expansion of the peace organizations.

If, as is objected, the politicians *will* choose politicians when "selecting officers to command 'the boys' when they go forth to meet the enemy," a strong argument is thereby presented against the present system. Let us, then, bend to circumstances which we cannot control and circumvent the "politicians" who will make the selections, by training beforehand the politicians to be selected, instead of expending all our efforts on a body that is so completely removed from the field of selection. Moreover, not only would the proposed plan as thoroughly educate as many regular officers as the present one, but it would furnish them with an even broader experience, and—what is quite important—would bring them into relations and acquaintance with the public men of the states in which they served that would tend strongly towards their selection as leaders of the volunteers by the state officials. The lack of acquaintance with the army that exists among the people is the greatest of present hindrances to the attainment of this so desirable and appropriate result. It is believed that very few, if any, men of military training, who were in civil life at the beginning of the late war, failed to receive the offer of a commission commensurate with their training and experience from the governors of their respective states.

It is also objected that the plan would deprive the states of the control of their own police forces. Not at all! The states can organize and actively train as much of their militia as they see fit. Moreover, the federal government would so dispose its battalions as to interfere as little as practicable with the state troops, for it desires not to antagonize but rather to encourage the training of soldiers by the states. There would probably be some unavoidable interference arising from the occupation in some cases of the same recruiting grounds. But it is believed that in few or none of the states is recruiting carried to the full capacity of a liberal system, and those states in which it is nearly so have a larger force than would be required for any ordinary disturbance. In an extraordinary one, less reluctance than under the present system would be felt in calling on the President for the use of the federal battalions stationed within their respective borders and composed of their citizens. In such cases the superior military officers of the states would be out, and the federal battalions ordered to serve under their military command would not be brought into any embarrassing relations with the civil authorities.

An advantage of the proposed system is that under it officers of the nucleal class would attain to a grade of command and responsibility much earlier than is now pos-

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sible, a circumstance that favors the development in the officer of the soldierly qualities of self-reliance and decision, and at the same time secures for the government a better use of the training it has bestowed on him. To employ a graduate of West Point in the line of file-closers for 15 years is to make very little use of a well-trained man, but worse still, is also to largely deprive him of the opportunity of development by experience that is necessary to his full usefulness in the time of the Nation's need.

II.

"Is the Three Battalion Organization the Best for us?"

Lieut-Col. H. S. Hawkins, 23d U. S. Infantry.

CAPTAIN EDMUNDS in attempting to show that the three battalion organization is not desirable for us, unconsciously adduces a strong plea in its favor. It is well known what a costly mistake the government at Washington made during the War of the Rebellion in constantly accepting new regiments from the several states whose governors enjoyed the patronage of appointing new colonels, lieutenant-colonels, majors, etc., instead of sending the new rank and file to fill vacancies in the old and experienced regiments.

Had the three or two battalion organization prevailed among the volunteers and if one battalion of each regiment had been kept at home drilling, recruiting and supplying vacancies in the field battalions, there would have resulted a partial check at least upon the vicarious patriotism of the governors who, like Artemus Ward, were anxious to contribute the war services of their wives' male relatives, even to the very last of them. So in our next great war if each regiment in the field has a recruiting battalion left at home, the folly of continually raising new regiments will be more apparent and consequently easier to upset. Vacancies among the officers would then be filled by promotion of those having creditable field service, and the regiments would not then be reduced so far as to become "the proper command for a captain."

It is not apparent that it would be necessary to deprive the state of the right to appoint the officers of its several regiments and to confer that right upon the general government by an amendment to the Constitution. The organization, arming and disciplining of the troops being a power conferred upon Congress, it exercises its right to govern such part of them as may be employed in the service of the United States. Consequently Congress can require that a regiment of infantry shall consist of three or two battalions with a colonel, lieutenant-colonel and three or two majors, and the War Department can muster in such number of regiments as may be needed and thereafter accept such officers and enlisted men as are needed to fill vacancies.

But while it is not true that an amendment to the Constitution is necessary, legislation by Congress is needed to provide for organization, recruitment, etc., thus "to determine what shall be used to fill up existing regiments and when they shall be organized into new regiments." The fault during the War of the Rebellion did not lie in the Federal constitution. It lay in the absence of proper methods of organization and recruitment which the governors of states took advantage of to increase their personal patronage.

So far it does not seem that Captain Edmunds is opposed to the three battalion organization in itself. That question has not apparently arisen in his mind, his only anxiety being to determine whether such organization is suitable to the condition which confronts us. That condition summed up is this:—twenty-five regiments of infantry of twelve companies each would limit us to about forty men to a company, and a four company battalion would have only 160 enlisted strength. So, as Captain Edmunds says, "the army as it now exists must be adapted to the drill regulations"

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and "the number of regiments must be reduced." These views will not be agreeable reading to those who want promotion through the three battalion bill.

It is to be regretted that the question which forms the title of Captain Edmunds' article is not discussed by him in its broad sense and as if we had not even the nucleus of an army.

But aside from the tactical merits and demerits of the organization as applicable to the requirements of modern warfare it seems to possess most desirable qualities for our volunteer system and for the very reasons which Captain Edmunds alleges as arguments against it.

1st Lieut. S. E. Stuart, Ordnance Department.

Captain Edmunds would appear to have fallen into an error in his article on the three battalion organization that is perhaps too common among officers, who might naturally be misled in the matter by the practice of the Civil War and the apparent similarity between the militia and the volunteers—which similarity, however, does not extend to the constitutional authority for their creation.

Capt. Edmunds quotes cl. 16, sec. 8, art. 1, of the Constitution, "The Congress shall have power to provide for organizing, arming and disciplining the militia, and for governing such part of them as may be employed in the service of the United States, reserving to the states respectively the appointment of officers and the authority of training the militia according to the discipline prescribed by Congress;" and having shown that the practice of forming new regiments instead of recruiting the old ones allows these latter to dwindle to about the size of a battalion, adds "Therefore to render a three battalion organization effective in a protracted war, an amendment to the Constitution would first be necessary, relinquishing the right guaranteed to the state to appoint its officers, and conferring that right upon the general government."

The authority to raise volunteers is not derived from this clause, but from clause 12, the one under which the regular army is created, "The Congress shall have power—To raise and support armies; but no appropriation of money to that use shall be for a longer term than two years." Federal authority has therefore the same right to organize the volunteers and appoint the officers therefor that it has in respect to the regular army. That the states have been allowed to organize their recruits into regiments and appoint the officers was not because of any legal requirement to that effect, but because it was deemed by the general government the best or most expedient method. May we not fairly hope that this mistake has been so thoroughly exposed that it will not be repeated, in all its enormity, at least.

It would undoubtedly greatly facilitate the raising of volunteers to allow them to be organized and officered by the states, and expediency might well warrant the application of this method to companies, and even to battalions under the three battalion organization; but the colonels should be appointed by Federal authority. It would seem that a practicable and efficient method would be for the President to issue his call on the states for so many battalions, to be maintained at full strength, and then for the War Department to organize the battalions furnished by the states with regiments and appoint the colonels, lieutenant-colonels, and the staff, the latter being nominated by the colonels. In this way the advantages of state and individual initiative in raising troops could be obtained, and the important commands still be retained to the general government.

The principle of localization should be followed by the states in raising the battalions, because of the great advantages it would offer in facilitating recruiting, particularly that for replenishing the diminished organizations, and the same principle

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should, for similar reasons, govern the combination into regiments. Regular army officers appointed as colonels might well be assigned to regiments from their own state also. A very valuable aid to the subsequent recruiting would be to have an extra officer, say a captain, to each battalion, as recruiting or depot officer, to enlist, drill and forward recruits as fast as needed. The three battalion organization might thus be found to possess a positive advantage by enabling the substitution of the battalion instead of the regiment as the unit to be furnished by the states.

Should the War Department formulate a general plan for raising and recruiting the volunteers, based on the experience gained in 1861-65, there is little doubt that it would be generally followed by the states. It is not fair to assume that the state executives will, under the stress of danger and the influence of the patriotic sentiment aroused by a foreign attempt to invade our territory, deliberately weaken the defense of the nation by refusing to conform to a good plan proposed by the central authority and in which all might unite at a time when concert of action should be essential to national safety. Is it not true that at the beginning of the Rebellion the War Department failed even more in its duty in failing to provide a proper system at the initiation of the movement for raising volunteers, which might serve as a guide to the state authorities, as did these latter in adopting a faulty one? The bad system once launched, it was impracticable to change it.

1st Lieut. W. P. Evans, 19th U. S. Infantry.

If we are content to fold our arms and placidly assume that whatever is, is best; if we assent to the proposition that the conditions of warfare do not change as the decades lapse and generations pass away; then we may assent to Captain Edmunds' conclusion that our infantry organization of to-day is best calculated to meet our necessities. But I cannot believe that his conclusion is founded on correct premises, and I cannot but think that the great majority of the members of this Institution will dissent most radically from the views set forth in the Captain's interesting article in the July number of the magazine.

It is true that we are confronted with the fact that the many schemes of reorganization which have been advocated in the last fifteen years, have failed when presented to Congress for adoption, but let us not too hastily conclude, for this reason, that Congress disapproves of the reorganization of the infantry into three-battalion regiments, and of the artillery into a corps. Schemes to further promotion and to advance private interests are not systems of reorganization, and if the gentlemen who sit in our legislative halls are shrewd enough to see the true significance of some of the reorganization bills, we must not, for that reason, conclude that Congress disapproves of the three-battalion organization for the infantry and of the corps organization for the artillery. On the contrary the reorganization features of these bills have never met serious opposition in Congress, but reorganization has been killed again and again by the deep solicitude for promotion which seems to occupy the minds of the alleged reorganizers.

We do not maintain our army for peace; we maintain it for war. Our present organization is good enough for times of peace. The absence of an organized army of any kind would be still better, perhaps. But although it is for war that we maintain our army, it is not, however, for war under the same conditions as those which existed in '61-'65; it is for war under the conditions of armament and equipment more nearly like those which prevailed in the wars of '70-'71, and '77-'78. What organization have the European participants in those wars? One similar in most respects to that which the real advocates of reorganization hope to see in our own army. The writer suggests that such a reorganization as that which is under con-

sideration would involve a reduction of the number of infantry regiments to fifteen. I do not think that any of the real advocates of reorganization would recede from their position on account of any reduction which might be necessary in the number of infantry regiments. If such reduction be desirable, by all means let it be made, and let us trust our personal interests to the sense of justice of our government whose generosity to its soldiers is second to that of no government on earth. The world is wide, and surely the government is not the only employer who would find us worthy of our hire. Whatever may be the result to us, personally, of reorganization, our professional pride should lead us to advocate a modern organization for our army, one suited to the necessities of modern warfare as developed in those wars which have taken place since the advent of breech-loading arms.

A word as to the constitutional objection raised by Captain Edmunds. If we are to carry on our wars by means of militia organizations, the objection which he urges would be a forcible one. But even the war with Mexico was fought with volunteers and regulars, and in our last two wars the militia, as militia, hardly figured at all. U. S. Volunteers are not militia, and the law-making power may provide for the appointment of the officers of the volunteer organizations by the President or perhaps by the Secretary of War. That Congress may have seen fit, during a civil war in which many of the States were lukewarm in their sympathies with the national government, to conciliate the governments of these States and to stimulate their zeal in raising troops by vesting the appointment of the regimental officers in the States ;—or, to speak more correctly,—that Congress may have permitted the States to organize and officer the volunteer regiments before accepting them into the federal service—does not preclude Congress from pursuing a different method of organization for our volunteers whenever they may be again needed. Indeed, the evils which resulted from the method of recruiting our forces in our last war are so widely known and have been so generally commented on, that it is not reasonable to suppose that Congress will ever again recruit its volunteer army, as it did in that war, by the constant addition of new regiments instead of by the infusion of recruits into old regiments. The militia may be said to be the great training school for our volunteer army, but in time of war militia organizations disappear. Their members become the advance guard, as it were, of our volunteer army, and come as completely under the control of the national government as does the regular army. Congress may permit the States to take such part in the organization of our volunteer army as, in its wisdom, it may see fit, but no constitutional provision reserves to the States any part whatever in the organization of the regiments or in the appointment of their officers.

III.

"Company Papers."

Captain E. L. Zalinski, 5th U. S. Artillery.

CAPTAIN COTTON in his essay upon "Company Papers," touches on one of the greatest burdens of the service. We can accept with equanimity such labors and duties as are obviously necessary. But in addition to the very large amount of writing which is unavoidable there is much that is unnecessarily voluminous. This is particularly the case with the Pay and Muster Rolls now recurring monthly. All orders and incidents referring to each individual must be cited in full and without abbreviations. In the case of company officers, each serving in various capacities at the post under different orders, very long statements are called for. For enlisted men, the date and place of enlistment, name of enlisting officer and period for which enlisted, are also cited each time. Whilst this last named memoranda may

appear a trifle for each individual, the aggregate becomes a considerable item in view of the fact that "ditto" or "ditto marks" are not permitted. In view of the fact that the details of each man's record, as it appears in the enlistment papers and company descriptive book, are fully on file at Regimental Headquarters and the War Department, one cannot see the utility of these repetitions, for the payment of the troops. The name of the enlisting officer and the place where enlisted are surely not in the least necessary for the guidance of the paymaster. The period of enlistment being at present for a uniform time fixed by law, may be properly omitted without rendering the record incomplete or obscure. It would appear to suffice, if only the orders and events affecting the pay status of a soldier be given in the monthly muster and pay roll.

Whenever any change occurs in the status of the officer or soldier the orders originally creating the status and the order changing it might be referred to. Many matters might be clearly presented by abbreviations. For example:

"Special Order, No. 22, Headquarters of the Army, Adjutant-General's Office, Washington, D. C., June 25th, 1893," might easily be written,

A. S. O. 22, s., 1893.

This would convey all of the needed information, a file of orders being always at hand; should it be deemed desirable to add the date it could be done in the fractional form used by business men. The record for the case cited would become A. S. O. 22, 25/6, 1893.

Other letters for the different Divisions and Departments could also be adopted, as for example

W. D.=War Department.
A.=Division of the Atlantic.
P.=Division of the Pacific.
C.=Department of the Columbia, etc., etc.

Other abbreviations for

Absent without leave=a. wt. l.
Absent with leave=a. w. l.

as likewise for other terms so frequently recurring in the muster rolls might be introduced. As forty-two rolls must be prepared annually, it is evident how much labor might be avoided.

It is said that the requirement for all of the data given in extenso, without abbreviations, comes from the officials of the Treasury. It would appear that upon proper representations being made, a change might be brought about. The ruling is that probably of a subordinate who clings tenaciously to the traditions of the past. There can be no good reason why the payment of the Army should involve any more labor than of the Navy. The latter is paid with much less formality and writing than in the case of the army. The effort should certainly be made to minimize the clerical labor in making various reports and returns. Will not the authorities aid to bring this about?

Captain W. M. Black, U. S. Corps of Engineers.

Captain Cotton's article on Company Papers is a timely protest against the elaborate system of paper work now demanded by all company commanders, a system which is bound to break down during prolonged war service, the very time when accurate records are most needed, the time for which peace duties are presumed to be but a preparation. At such a time this system, demanding too much, must absolutely foster neglect, which in turn must be wiped out so far as personal responsibility is concerned in that convenient clearing house, the Board of Survey. But the government must pay.

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Captain Cotton has failed to mention one of the clerical evils which survives in the army, though long since discarded in the more economical methods of civil business life. I allude to the copying by hand of each paper issued from or passing through a company office. Hand copying is wasteful of time and, unless carefully compared, inaccurate. Besides this, a sharp eraser and acid in skilful hands will make a change in a hand copy which it is not easy to discover and hence may defeat the very object for which the copy is retained.

The permanence of the best copying inks has been fully proved. A press copy of writing made with such an ink is absolutely truthful, is quickly made and cannot be erased or changed without showing the tampering. Copy presses are unnecessary. For years the writer has used in office and the field a copy book which requires no press, can be used wherever water and a rag is to be found and which produces clear copies with any copying ink. Why cannot our books of letters sent and our retained voucher books, etc., be press copies?

Could not another method be borrowed advantageously from the practice of the great railroad and express companies? Why cannot all returns be on forms printed in copying ink and the retained copies be press copies! Could not even the morning report book be improved thereby? Would it not be better for the book never to leave the company? Could not the report be on a slip, in the present form if desired having the remarks below, copied in a press book for the company records, and filed at headquarters for the regimental return, which can be consolidated therefrom? Would not this make unauthorized alteration more difficult and give a truer and more readily consulted file for headquarters?

IV.

"Some Further Suggestions in Regard to Arms, etc."

Capt. E. L. Zalinski, 5th U. S. Artillery.

CAPT. GARDENER'S article is replete with valuable suggestions and suggestions for suggestions. If every company commander were called upon annually for suggestions in matters pertaining to arms and equipments, etc., of his branch of the service, material of value would be obtained. Such material could then be sifted by a board of officers. The suggestions which appear good and reasonable as well as feasible of application could be selected by them and recommended for adoption. It will be frequently found that many ideas and suggestions are common for the service and not impossible of application or even difficult of attainment.

Equipments.—The application of aluminium for use in lieu of brass in our equipment is obviously good and is not objectionable at the present day on account of expense as, although costing more per pound than the brass, it is so much more in volume that the cost of material is at present about the same and in the near future will probably be less. Even if more expensive, the cups, meat cans and canteens should be made of the lighter metal instead of tin.

A uniform system of mess chests and company boxes is desirable. It is, however, a question whether it would not be well to provide companies with suitable waterproof bags for the sugar, salt, coffee, tea, flour, etc. In garrison these could be suspended on a frame work so as to keep the mouths open and convenient for use. They could have a covering flap as well as puckering string so as to retain them well closed. These bags may be more easily cleaned and kept clean than the compartment of a chest. They can be more easily transported in movements of the troops than can the rather bulky chests.

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The laced canvas trunks referred to as in use by the Canadian militia appear to be most suitable for service and would be stowed more easily when in garrison than the bulky packing boxes and chests which each company commander now feels obliged to keep on hand.

A small chest of tools was formerly issued to each company, but has in later years been withdrawn. This should again be provided to companies. There are many small repairs about the quarters and mess rooms that can easily be made by some of the men of the company. To have these done by the post quartermasters usually involves long and vexatious delays.

Strong burlap bags should be provided for covering the tents in store and in transportation. The white tents soon become blackened and dirty by contact with camp kettles, etc., in the wagons. These bags could be made with eyelets so as to be laced up easily. They are not expensive, and would more than repay their cost by the saving of the wear and tear in transportation of the tentage and in the increased neatness of the tents.

It is a question whether brown canvas or duck would not be more suitable for tents than the white duck used at present. It would not get soiled easily and would present generally a neater appearance. It would be less trying and injurious to the eyes than the white tentage and would not so easily be discovered in the distance by the enemy.

Rations.—The suggestions as to the size of packages of rations so as to make each conform to a definite number of 50, 100, 500 or 1000 rations is admirable and could readily be carried out. The United States purchases are so considerable that merchants and manufacturers throughout the country would soon conform the size of their packages to these requirements. Such a system would be of very great advantage in the distribution to any large force of volunteers which might be called suddenly into existence. It simplifies that which is now often complex and puzzling to the beginner.

The ration, as issued at present, is ample for garrison purposes. But some changes may well be made for the field ration. The beef extract or solid soup tablets might be issued. The objection urged against the latter is that it will not keep a long time. It is usually put up in tin foil and paraffined paper, but for the use of companies in the field it could be put up in larger packages and sealed in tin cans as are other meats and vegetables. The Germans put their "Erbswurst" or pea sausage solidified soup in tin foil and paraffined paper. A sufficient supply is kept constantly at hand with each regiment for any mobilization that may be ordered. It is used, however, from time to time in garrison, so that it is renewed every three and six months. Put in hermetically sealed cans it can be assured to keep for a year or more. But the use and expenditure of that longest on hand might be authorized from time to time in garrison, and freshly canned material supply its place.

If good extract of coffee or coffee tablets could be made so that they would keep and be free from suspicion of adulteration, they would be useful for the field ration. But so far all that have been put on the market are open to suspicion as to adulterations. The Germans, Swedes and others are trying a tablet of coffee, browned, ground and compressed, covered and sealed in paraffine paper. These render the ration transportable in the haversack and much less bulky. It is possible that this might further be improved by covering it with a hard glazed coating of sugar which would serve to protect the coffee, retaining its aroma and sufficing to sweeten the coffee, whilst being a more convenient and less bulky form for the sugar.

Chocolate might also be used in lieu of coffee. There is no such waste in chocolate as there is in coffee, much of the bulk of the latter being material which is thrown away.

All of the material of chocolate is of use. It is nutritious and sustaining. When it is not convenient to cook it, as in forced marches or in the presence of the enemy, it may be eaten and is very sustaining. Its chief drawbacks are that it is more expensive than coffee and less stimulating. But the ratio of increase of expense is not so great as to render it prohibitory, when we consider that it provides a certain amount of nutriment. Expense, however, should be considered in but a minor degree when we desire troops to take the field and wish them to accomplish the maximum possible.

The lack of stimulating quality in the chocolate may be made up for by adding a small percentage of caffeine or coca to it. Caffeine is made synthetically and is not so expensive as it was when only extracted from coffee. I have had some chocolate made up for me in this way, but owing to my illness have not yet put it where it could be practically tested.

Amongst older officers there is a great prejudice against dessicated vegetables. This arose from the reason that the dessicated vegetables furnished were of inferior quality and troops also did not understand how to cook them. They are now better prepared; they require to be soaked a long time before cooking. They should be soaked in cold water over night when possible, as are beans. Captain Gardener says that more troops were killed by "Bacon than Bullets." I would like to correct this by substituting "Beans" for "Bacon." The insufficient soaking of *beans* by the new levies caused more disease than did any possible misuse of bacon. Dessicated vegetables, compressed so as to reduce bulk to a minimum, should form a part of the field ration, especially potatoes and onions. Dessicated rhubarb makes a most palatable dish when properly soaked and cooked. It would be invaluable as an antiscorbutic, and would add a great relish to the campaigners' menu. It can be dessicated so that it has but little weight and bulk, but when cooked it makes a sauce that is hardly inferior to that made from the fresh vegetable.

Indian meal and hominy should also form a part of the field ration. They both have a maxium of nutrition for their bulk and weight. The Indian meal does not spoil by wetting as readily as does flour, and unlike the latter it may be made into palatable and digestible bread in the camp fire, without yeast or yeast powder.

Clothing:—I fully concur in Captain Gardener's views on the color of the uniform. The gray is much better than the blue for general serviceability and neatness, and is far less visible than the latter. The longer ranges of modern rifles renders the question of relative visibility of troops a more important one than in our previous wars. The *difference* of the visibility of various colors becomes much greater as the distance increases. European armies are now making some radical departures from old time gorgeousness of the uniforms with a view to rendering them less visible. The "Kharkee," a brownish drab cloth, is much used in the British Indian army and commends itself for its relative invisibility and serviceability. I believe the gray would be equally serviceable, certainly the Confederates found it so. The sentiment of the older generation is against the adoption of this color because the Confederates used it. But the men of that generation are not likely to be called upon to bear the brunt of battle in the future. They will not have their lives endangered by wearing a uniform of a conspicuous color. Gray has been for years the color of the uniform for cadets at the Military Academy, and there is no sound reason or sentiment why it should not be adopted as the army uniform. Because a one time enemy displayed better judgment than we did, is no good reason why we should not follow his example in the future.

I differ from Captain Gardener regarding some of the points as to the overcoat. The material used at present very readily absorbs water and might be improved in that respect. As a cloth that is less pervious than the present material might be uncomfortable on account of the perspiration, the lining could be such as to absorb it and

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the shoulders might be ventilated as are some of the rubber coats and mackintoshes.

The cape is a very valuable part of the overcoat, but should be made much longer. It will then better protect the stomach and small of the back—parts of which it is important to keep warm. It can be worn alone in warmer but damp weather, and in moderately cold weather the coat alone can be worn. In very cold and inclement weather the coat and cape may be combined, giving thus a greater flexibility of suitableness to the climatic conditions. The cape should be of a length to at least cover the arms and hands when hanging by the side, and made very full. The knapsack can then be readily slung underneath it and be protected by it from rain, etc. The cape should have a puckering string or belt at the waist so it may be drawn up and held in there to prevent the wind from getting underneath it. It should have two buttonable slits for the arms. A wide, long cape would not alone serve to protect the infantryman's stomach and back, but would also aid to keep the cavalryman's saddle seat dry in wet weather. If it is not feasible to find a cloth that is measurably impervious to water and at the same time serviceable. then the part of the cape immediately covering the shoulders should be made of waterproof mackintosh cloth or rubber, as it is here that the water finds its way through most quickly.

The skirts of the coat should be as suggested by Captain Gardener, much longer and fuller than those now made.

The hood is a most useful addition to the uniform in inclement weather. The Russians use it as a separate part of the uniform called the "Bashlik." It is a hood made of coarse camel's hair, and has two ends about two feet long which are used to bind it about the neck and protect the latter also. When not in use it is worn hanging down the back just under the overcoat collar, with the two ends, passing over the shoulder and crossing the chest, held in the belt. It is an excellent protection in cold and wet weather. When I mentioned to a Russian officer the objection which is usually urged in our service against the introduction of the hood, that a sentry might not hear as well, the reply was that "it is better that the soldier should sometimes miss hearing than to risk losing his ears entirely in cold weather." A similar hood in our equipment is desirable.

The day has passed for theatrical soldiering by regular troops. Whilst it may be desirable for National Guard troops to have showy uniforms, these should be dispensed with when consistent with complete comfort and serviceability. It is possible, however frequently to combine neatness of appearance with serviceability. This cannot be done with the dress coat but can be accomplished in the blouse, as remarked by Captain Gardener. The blouse in itself, properly fitted, looks neat and soldierly. If it is desired to make it a little more showy for occasions of ceremony, it could be accomplished by buttoning on to the shoulders and cuffs, pieces of cloth of the facings of the color of the arm of service.

A long knit Jersey is an excellent garment to be used over the blouse, or independently of it, in very cold weather, and might well be issued to troops in our northern stations and for winter campaigning.

On the other hand a light weight blue or brown serge uniform might be issued for service of troops stationed in the warmer climates. Inconvenient as it is to provide different kinds of uniforms, it is rendered necessary by the very great range of climate of the wide-spread territory of the United States.

It would appear that the experience with the excellent brown canvas fatigue overalls, would suggest their substitution for the white stable frocks and overalls now worn at stables by our mounted troops. The nature of the work is such as quickly to render the white apparel dingy and this might as well be avoided by substitut-

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ing a more serviceable color. The clothes are worn to protect the other garments and not as a matter of parade. As it is, at some posts, the mounted troops are required to have their white stable frocks and trousers for stable work, and the brown ones for general post fatigue work.

There is such a wide variance in our service as to the cap that it is hopeless at present to make any suggestions. The younger officers prefer the present service cap because it is "natty." But beyond that it has nothing to recommend it. It does not protect the head from either sun or rain. The ones from whom we obtained it, the French, have abandoned it. There is one pattern which the French, Italians, Austrians, Dutch, Belgians and Scandinavians have very generally adopted and which approximates the one which we at one time had in our own service. With suitable trimmings it looks neat and soldierly and it is comfortable. Personally, I like the German and Russian cap with its soft broad crown and protecting visor shade. It is not unlike that worn by our own troops in the Mexican War, and can also be made neat and soldierly in its appearance by suitable trimmings. The French Alpine troops' Biscayan cap with its very wide overhanging crown is comfortable, the latter serving as a shade for the eyes. The British Glengarry cap is also very comfortable as a fatigue cap. There are plenty of patterns to choose from, any one of which would be far better than the absurdity which we are now called upon to wear.

The question of shoes is one about which we can learn but little from foreign services. The one we now have issued to us has, at times, its shortcomings, due to imperfect make or material, but the officers of our Quartermaster's Department have worked most earnestly to secure a serviceable article and so far as I can learn have been ready to listen to the suggestions of officers of the line who have given the matter thought. A shoe made on the plan of the so-called Creedmoor shoes, with broad heels and soles, covering well the ankles, fairly flexible at the instep and broad enough at toes so as to give them full play, would appear to cover the requirements of service. I have found that my shoes remained serviceable for a much longer time when putting on iron heel and toe plates of the Blakey pattern on the heel and sole. Something like these could be added to the shoes when issued and could, in addition, be issued to companies to replace the plates when worn. These plates have projecting points by which they can be attached very quickly and effectively by the soldier himself. Their use will save the shoes very much, more than doubly prolonging their serviceability. With such plates in reserve on the march, the soldier could almost dispense with the extra pair of shoes which Wellington and other commanders considered necessary for the field equipment.

The use of a small bottle of rubber cement and a few pieces of thin leather will enable many repairs as to small holes in the uppers to be quickly and simply made, and I would suggest such being carried with the company equipment when on the march.

Experiments are now making in Europe with rubber heels giving more elasticity to the tread and, it is said, with good results, the soldier marching a given distance with much less fatigue. This is worth trying. I have tried thick rubber soles tacked on to my ordinary leather-soled shoes, and from the experience with these I would suggest the addition of a protecting iron plate, the rubber being made somewhat cellular so as to yield more readily than if solid. If not protected by the iron plate the rubber wears away too quickly. It is possible that a combination steel and rubber heel might give both elasticity, durability and cheapness. The rubber poncho as now made is not long enough for the mounted man, fully protecting neither his seat nor his saddle, and just conducting the water nicely into his boots. It could be improved by having a thin rubber hood at the slit which could be tied or buttoned down out of the way on the

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inside, there being two prolonging pieces to be hooked around the legs covering the opening of the boots.

It has been suggested and tried, to make the poncho partially an air-bag, thus serving as a pillow when blown up and aiding troops in crossing streams.

The suggestions herein given are largely due to a perusal of Captain Gardener's valuable paper. They are some of the results of personal experience, I trust that other officers will be led to give the army the benefit of their experiences and thought, and thus aid to bring about a complete and serviceable equipment for troops in garrison and in the field.

V.

"Historical Sketch of the Second United States Artillery."

1st Lieut. Wm. E. Birkhimer, Adjutant 3d Artillery.

ON page 913 of the July, 1893, JOURNAL, Lieut. W. A. Simpson states that when, in September, 1862, Battery A, Second Artillery, was made a horse battery, it was "the first in this country." This is an error. Battery C of the Third Artillery had, before this time, served four times as long as a horse-battery as Battery A has ever done, besides being its associate as a horse-battery during the Rebellion.

The organization of Battery C as a horse-battery in 1838 was effected after the subject of its equipment had received the very deliberate consideration of the War Department. Secretary Poinsett had resolved to give effect to the law of March 2d (not 21st), 1821, as regards light artillery. C, of the Third, under Captain and Brevet Major Ringgold, was the first organized. The question came up at once as to whether it should be field or horse-artillery, and was referred, under date of October 24, 1838, by the Adjutant-General, to the Ordnance Board, Washington City, for the views of the latter. Promptly the answer was given (October 25th, 1838) in favor of horse-artillery. The same day the Adjutant-General wrote to Major Ringgold directing him to equip his company as horse-artillery; and, as if effectually to forestall all doubts regarding any possible confusion regarding what was meant by that term, directed that all the men should ride on horseback, and none of them should be carried on the guns or limbers. All this is matter of official record.

Ringgold's company was organized as horse artillery accordingly. It was a four-gun battery. In the advance on Monterey it was attached to the dragoons, because it could keep pace with them under all circumstances.

The light artillery kept steadily rising in General Taylor's estimation until, after Buena Vista, he could not do enough for it. He then authorized Captain Braxton Bragg to renovate it, and thoroughly fit it up as a six-gun battery. The command was exactly suited to this officer. All evidence is to the effect that he now embraced the season of repose to raise the battery to the highest attainable degree of proficiency in every respect. But health failing, he was compelled to relinquish command, which he did to Lieut. Henry B. Judd, 3d Artillery, an officer well qualified to maintain to the fullest this high standard of excellence.

After the peace the battery was marched from camp at Walnut Springs, near Monterey, Mexico, to Sante Fé, New Mexico. Here, as artillery, it was of course useless. The guns were stored, and the personnel used as cavalry or on other kindred duty until the remnants were marched to Fort Leavenworth in 1850. So much for horse-battery C.

When General Scott moved to the Southern (Vera Cruz, City of Mexico) line of operations, Colonel William Gates, 3d Artillery, was left in command of the Depart-

ment of Tampico. The city was an important port of entry, and Colonel Gates was military governor. Among other troops, D of the 3d Artillery was left there, under Captain F. O. Wyse. It was mounted as a six-pounder horse-battery, and served as such until the peace. And though it was not so fortunate as some others in being in many battles of that war, it was kept constantly in a state of preparedness to fight at a moment's warning. On one occasion it confessedly saved our troops there from a grave disaster. On July 8, 1847, Colonel L. G. De Russy, Louisiana Volunteers, left Tampico with a mixed command, accompanied by part of Wyse's horse-battery, to procure the release of certain prisoners held by the Mexicans. Not correctly appreciating the duplicity and cunning of the Mexican commander, Colonel De Russy penetrated so far into the hostile territory, in vain hope of accomplishing his mission, that he found himself surrounded by an overwhelming foe, with whom the inhabitants were combined to render certain either the capture or destruction of his command. This was only averted by the determined bravery of the troops, maintained throughout three days' fighting in retreat, in a country where every tree and stone concealed an armed enemy. Many were killed and wounded. The fighting was particularly severe at the crossing of the Calabosa River; and, for his conduct here, Wyse was brevetted Major. In his official report Colonel De Russy says that the horse-artillery proved the salvation of his troops. "It is an arm," said he, "as yet but insufficiently appreciated, but of which the vast importance and usefulness must be developed by experience."

There is no rivalry in this matter between the Second and Third regiments of Artillery. They came into service at the same time, and have fought side by side, both as infantry and light artillery, during the Florida, the Mexican, and the War of the Rebellion. From the fatal day with Dade until the glorious morning at Appomatox, they have stood shoulder to shoulder in generous emulation, with no thought on the part of either of detracting from the honors of the other, and only solicitous that the fair fame of both should be carefully guarded. It is with these sentiments only, and with a heart swelling with pride as the martial deeds of the gallant Second, so well portrayed by Lieut. Simpson, are recalled, that, to subserve historical truth, the preceding statement of facts are here given.

1st Lieut. Eli D. Hoyle, 2d U. S. Artillery.

The brief historical sketch of "The Second Regiment of Artillery" by the regimental adjutant, Lieutenant W. A. Simpson, which appeared in the JOURNAL OF THE MILITARY SERVICE INSTITUTION for July, is "mighty interesting reading," at least, for officers of the regiment.

Lieutenant Simpson's known ability and accuracy in everything he puts his hand to gives additional value to his sketch. The author has limited himself to a brief statement of the bare facts, and, although this is in accord with the JOURNAL'S scheme in publishing this series of sketches, one cannot but think of the unrecorded chivalrous deeds connected with the gallant names he mentions and hope that some day he may be induced to amplify and enlarge his work. Too little is known of many of our military heroes.

In 1881 General H. J. Hunt was a guest in my house and one night he asked me abruptly, "What do you know about Captain Duncan, once of the 2d Artillery?" I was obliged to confess that I knew next to nothing about him. After some remarks on the ignorance of the youngsters of that day and the transient nature of fame, the General occupied several hours in telling me about Duncan, his genius and his wonderful adventures and ended by saying, "I tell you, sir, 'Job' Duncan was the ablest soldier this country has yet produced." I begged General Hunt then, and afterwards,

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to write down what he had told me. It is a pity that no one has seen fit to write a life of this most remarkable man.

What memories stir at the mere mention of the names of John Sedgwick, C. F. Smith, A. A. Humphreys, James Duncan, H. J. Hunt, W. F. Barry, J. C. Tidball and other lieutenants and captains of the 2d Artillery.

Lieutenant Simpson has ably sketched the regiment's service in the Florida Indian War. It is a curious fact that the regiment lost nine officers, killed, died of wounds, etc., in a little over two years—1835–38, while its losses, from the same causes, in the four years of the late war were only seven officers.

The particularly distinguished service of Light Battery A., 2d Artillery, is a source of great pride to that organization and to the regiment. It has been mounted almost continuously since 1839; it was the first organization of the regular army to reach Washington in 1861, and thus became, as it were, the nucleus of the Army of the Potomac; it fired the opening shot at Gettysburg, and its services in Mexico and in the late war were glorious. Considering its whole record, it is believed to be the most distinguished battery in our service. Any one who has ever had occasion to search the old and musty records of a regiment, will appreciate the time and effort devoted by Lieutenant Simpson to this labor of love. The thanks of the officers of his regiment are due him for the able manner in which he has acquitted himself.

VI.

"Recruiting and Desertion."

Captain Geo. W. Davis, 14th Infantry.

A PERUSAL of General Abbot's paper and his reference to the diminishing rigor with which desertion has been punished in our service, brings to mind the circumstance that no longer ago than 1818 and at our military seat of learning on the banks of the Hudson, a method of punishment was common, which, if not more rigorous than lashes on the bare back by the musician of the guard, was, in in the light of to-day's practice, so unique as to deserve mention.

We have only to turn to the records of a general court-martial held at West Point seventy-five years ago for a proof of the ingenuity of our ancestors in "getting around the law" which abolished flogging. The culprits were simply picketed for a certain time. Let us see what this signified.

The word is thus defined by Duane in his Military Dictionary, published in 1810:

"Picket,—a barbarian kind of punishment, so called, where a soldier stood with one foot upon a sharp-pointed stake; the time of his standing was limited according to the offense."

In some other standard work I have seen the further description that the soldier was suspended by cords that sustained his whole weight unless he chose to gain support from the sharp point of the projecting picket.

Fancy the commotion that would be now occasioned by a repetition of such an exhibition!—a man tied up by his thumbs so that for three minutes his whole weight must depend from the thongs above or be supported on a sharp peg or picket so driven in the ground below as to be the only thing within reach of his bare feet dangling in the air. Is it strange that the law prohibiting flogging should have been repealed and the raw-hide restored? However rigorous and brutal the punishment of "lashes well laid on," would it be more than pastime compared with that which the Court and General Swift, "as the organ of the President," caused to be inflicted on Private Goodsell?

The following extract from the proceedings of the court-martial in question, was

copied from the original record in the Judge-Advocate-General's office in Washington. The readers of the JOURNAL may also be interested in noting the form of procedure then adopted and its variance from the requirements of law and regulations of to-day:

Proceedings of a General Court-Martial held at West Point in the State of New York by virtue of the following order, viz.:

HEADQUARTERS ENGINEER DEPARTMENT,
Washington, Apr. 25, 1818.

GENERAL ORDERS:—A General Court-Martial will assemble at West Point in the State of New York on Monday, the 11th of May next, at 10 o'clock A. M., for the trial of such prisoners as may be brought before it. Capt. Bliss of the 6th Regiment of Infantry President.

The Commanding officer at West Point will detail the other members and a Judge Advocate.

(Signed) By order of Brig.-Gen. SWIFT, Chief Engineer,
GEO. BLANEY, Aide-de-Camp.

West Point, May 5, 1818.

ORDERS:—The General Court-Martial ordered by Brig.-Gen. Swift, Chief Engineer to convene at this Post on Monday the 11th inst. and of which Capt. Bliss of the 6th Regiment of Infantry is President will be composed of

Brevet Capt. David B. Douglass of the Corps of Engineers,
Lieut. Geo. W. Gardner, of the Corps of Artillery,
Lieut. Thos. J. Leslie of the Corps of Engineers,
Lieut. Constant M. Eakin of the Corps of Artillery.
} Members.

Lieutenant Jas. D. Graham of the Corps of Artillery will perform the duties of Judge Advocate.

By order of the Major Commanding.
JAS. D. GRAHAM, Lieut. and Post Adjutant.

West Point, May 11, 1818.

The Court met pursuant to the foregoing order. Present:

Capt. John Bliss, President,
Brvt. Capt. D. B. Douglass,
Lieut. Geo. W. Gardner,
Lieut. Thos. J. Leslie,
Lieut. Cons't M. Eakin.
} Members.

Lieut. Jas. D. Graham, special Judge Advocate.

The court being duly sworn in presence of all the prisoners, who being previously asked if they had any objections to any of the members mentioned in the general order, and all replying in the negative, the court proceeded to the trial of Lloyd Goodsell, a musician in the Company of Bombardiers, Sappers and Miners, on the following charge preferred against him by Lieut. Horace C. Story of the Corps of Engineers, viz.:

CHARGE.—DESERTION.

Specification.—For that the said Goodsell did desert from his company while stationed at West Point, New York, on or about the 15th day of January, 1817.

To which the prisoner pleaded GUILTY. The court therefore find the prisoner Lloyd Goodsell, the musician in the Company of Bombardiers, Sappers and Miners guilty of the charge and specification preferred against him. * * *

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The court proceeded to the trial of Ambrose Crane, a private in the Corps of Artillery on the following charge preferred against him by Lieut. Horace C. Story of the Corps of Engineers, viz. :

CHARGE —DESERTION.

Specification.—For that the said Ambrose Crane did some time during the month of December, 1817, desert from Capt. Hall's Company in the Corps of Artillery then stationed at Fort McHenry.

To which the prisoner pleaded GUILTY.

The Court therefore find the prisoner Ambrose Crane, a private in the Corps of Artillery, guilty of the charge preferred against him. * * *

No other case being submitted for the consideration of the Court it adjourned to meet again to-morrow, the 19th inst. at 9 o'clock A. M.

(Signed) J. D. GRAHAM, Lieut. and Special Judge Advocate.

West Point, May 19, 1818.

The Court met pursuant to adjournment. Present :

Capt. John Bliss, President,
Brvt. Capt. D. B. Douglass,
Lieut. Geo. W. Gardner,
Lieut. Thos. J. Leslie,
Lieut. Cons't M. Eakin. } Members.

Lieut. J. D. Graham, Special Judge Advocate.

The Court proceeded to the following sentences :

The Court do sentence Ambrose Crane, a Private in the Corps of Artillery, to make good the time lost by his desertion, to stand in the pillory six hours at a time for six days in succession and to be kept at hard labor for one year with a ball and chain. The Court however, in consideration of the good conduct of the prisoner, do unanimously recommend that the punishment inflicted on him by standing in the pillory, be remitted.

The Court do sentence Lloyd Goodsell, a Musician in the Company of Bombardiers, Sappers and Miners, to be picketed for three minutes, to have half his pay stopped for one year, thirty dollars and twenty cents of which to defray the expense incurred in the pursuit of him, and the remainder added to the funds in the Quartermaster's hands for the apprehension of deserters, and also to make good to the United States the time lost by his desertion. * * *

The Court having heard the whole of the proceedings read over and no other case being submitted for its consideration, adjourned *sine die.*

(Signed) JAMES D. GRAHAM, Lt. Arty and Special Judge Advocate.
(Signed) J. BLISS, Capt. 6th Inft. and Pres't of the Court.

HEADQUARTERS, ENGINEER DEPT.

Washington, July 23, 1818.

ENGINEER ORDERS :—At the General Court-Martial of which Capt. Bliss of the 6th Regt. of Inft. is President was tried, * * * Lloyd Goodsell, a Musician, on the charge of desertion. To which charge he pleaded Guilty. He was found guilty and sentenced "to be picketed for three minutes, to have half his pay stopped for one year, thirty dollars and twenty-two cents of which to defray the expense incurred in the pursuit of him, and the remainder to be added to the funds in the Quartermaster's hands for the apprehension of deserters, and also to make good to the United States the time lost by his desertion." * * *

Also was tried Ambrose Crane, a Private in the Corps of Artillery, on the charge of desertion. To which the prisoner pleaded Guilty. The Court found him guilty and

sentenced him to make good the time lost by his desertion, to stand in the pillory six hours at a time for six days in succession and to be kept at hard labor for one year with a ball and chain. The Court however, in consideration of the good conduct of the prisoner unanimously recommended that the punishment inflicted on him by standing in the pillory be remitted.

* * * * * *

The proceedings of the above mentioned Court-Martial convened at West Point, State of New York, on the 11th May, 1818, by order of Brig.-Gen. Swift, Chief Engineer, as the organ of the President of the United States, is hereby approved so far as relates to the trial and sentence of the prisoners brought before it, and the sentences are ordered to be carried into full effect under the orders of the Commandant of the Post of West Point, excepting that the part of * * * Ambrose Crane's sentence which directs that he should stand in the pillory is remitted in consequence of the recommendation of the Court.

* * * * * *

The Court-Martial of which Capt. Bliss is President and Lieut. Jas. D. Graham, Special Judge Advocate is hereby dissolved.

By Order: J. G. SWIFT, Chief Engineer.

Admiralty and Horse Guards Gazette.

Many and various are the methods by which from time to time it is attempted to popularize army service in this country. Dating from the Crimean War, military reformers in and out of the army and in and out of Parliament have year by year attempted to improve the condition and to add to the moral and material comfort of the man who metaphorically takes the Queen's shilling. On the other hand, side by side with the increased comforts we give our soldiers, we call upon them for much in return. Hand in hand with improvements in his lodging, messing, clothing, sanitation and remuneration, we ask him to learn a good many things the ante-Crimean Tommy Atkins never dreamt of. Amongst the "advantages of the army" which the recruit did *not* hear of when he enlisted are courses of systematic training, field works, excavations of shelter trenches, construction of gabions, fascines, revetments and bridges, signalling, cooking, and continual changes in drill and field movements. We laboriously turn the raw recruit into a trained soldier. As soon almost as he has become the finished article we turn him into the Reserve, and go through the same weary process with a fresh batch of the raw material. Well, in the Reserve the soldier day by day unlearns the lessons he has so laboriously mastered, and becomes a seeker after the civil employment which, in too many cases, he fails to obtain. In this quest for the modern Golden Grail he receives no support from the State which he has so well served, and, on the whole, is at a decided disadvantage when compared with his civilian *confrères*. This should not be. We have in this journal insisted that the discharged soldier of good character should have a preferential claim for all posts in the gift of the Government whose duties he is qualified to perform. These are almost innumerable. In the Post Office, in the civil service, at the War Office, at the Admiralty, the old soldier and sailor should find employ; not only so, but in thousands of other places, aye, throughout the railways these men should be found. No railway bill should be allowed to pass Parliament that does not contain a clause providing for the employment of a certain fixed proportion of men who have passed through the ranks. In many other directions should the future of the deserving soldier and sailor be assured; not one of them willing and able

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to work should find a difficulty in obtaining employ. Is this an ideal? Is it one of these impossible plans which theorists propound? No; a proof of its feasibility is conclusively set forth below. If it be carried out in countries like Austria, Germany, France, and Italy, with conscription in vogue, how much more should it be carried out in this country the basis of whose military system is a voluntary army?

Under the somewhat obscure heading of "Commercial No. 5, 1893," a series of Parliamentary Reports of a highly suggestive character to service men have this week been issued. They comprise reports from Her Majesty's Embassies in Austria-Hungary, France, Germany, and Italy, on the civil employment of soldiers and sailors on completion of service. We admit that the value of these reports, so far as practical lessons for this country are concerned, is to some extent discounted by the fact that conscription prevails on the Continent; on the other hand, it may be pointed out that there is really not much difference in principle, as with all the continental powers special inducements to prolong the service are required. With Austria and Germany in particular the problem is how to keep good men in the ranks whence to form a reliable corps of non-commissioned officers. In the Dutch monarchy non-commissioned officers who have fulfilled twelve years' service and have conducted themselves well acquire the claim to employment under Government, also in the railways, steamship companies, and other undertakings subventioned by the State. An enormous number of posts in the civil service of the country are likewise exclusively reserved for the same class. So far for Austria. Now, with regard to our French neighbors. Lord Dufferin points out in a despatch to Lord Rosebery that owing to the system of conscription in France, every Frenchman, with few exceptions, must serve under the flag, so that there is no necessity to hold out to recruits an inducement to enlist by the prospect of obtaining civil employment on leaving the service. Still, owing to the need of having well-qualified non-commissioned officers, soldiers who have already attained this grade are tempted to reëngage after the compulsory period of three years by the special inducement amongst others of about 500 different descriptions of appointments being reserved for retired non-commissioned officers. We may here parenthetically remark that Colonel Talbot's report from France is far from being exhaustive and in this respect compares unfavorably with the report furnished by Colonel Douglas Dawson, the military attaché at Vienna.

In endorsing the third of the series of reports from Germany Sir E. B. Malet happily remarks that it is allowable to chance that if State employment in the United Kingdom were assured to soldiers of good conduct after the completion of a certain number of years of service the general public would gain largely through the increased efficiency of the service in these departments to which such soldiers were admitted. From a perusal of Colonel Swaine's report it is evident that Germany is even more advanced than Austria in the good work of finding civil employment for her defenders. It may be inferred of course that as almost every Teuton is a soldier it is not surprising to find so many billets found for them when they subside into military life; but it must be borne in mind that the 92,345 places are reserved exclusively for those who have served twelve years and leave with a good character. In Germany the offices which offer the most situations for civil employment to old soldiers and sailors are, in the empire, the postal and telegraph administration and services; the Admiralty, the War Ministry in all its branches and departments, and the railways. Again in the separate kingdoms and principalities of the empire, naval and military veterans are found employ in the police and gendarmerie, the administration of taxes and customs, and the railways. The extent to which non-coms., and men who have seen a dozen years' service are employed in Germany may be seen when we mention that there are altogether no fewer than 491 categories under which this class can obtain civil situa-

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tions. In the British service, in the last year of a man's service (and Colonel Swaine, when in command of an English battalion admits he particularly noticed this), he becomes as a rule unsettled. He begins to think of his future, and wonders how he is to obtain employment when leaving the colors. The German soldier has no such fear, he knows that honorable employ of some kind will come to him as a natural consequence of his services in the army. Would to Heaven that we in England could truthfully echo what Colonel Swaine observes of the Kaiser's territory, "An unemployed old soldier is an unknown article in this country, unless he has been discharged with a certificate of character that ranks him as a vagabond." Turn we now to Italy. Colonel Slade, our military attaché at Rome, has presented a valuable report, but unfortunately he has allowed himself to digress into many topics outside the scope of the subject with which he is dealing. In fact, he has furnished an essay—interesting no doubt, but quite irrelevant. His enthusiasm leads him to make such statements as this, "Crime is almost unknown in the Italian army," "At Court all the old employés wear medals on their breasts," and "Italy's social and political redemption was effected through her army." Generally speaking, we find that the report from Italy shows conclusively that the Italian soldier is pretty well looked after so far as civil employment is concerned when he quits the colors. The offices open to non-commissioned officers of the Italian army and navy after satisfactorily completing twelve years' service with the colors are the subordinate posts such as ushers, messengers, caretakers, etc., of the following offices: The Foreign Office, the Home Office, the Treasury, the War Office, the Admiralty, the Department of State and Justice, the Educational Department, the Public Works, the Department of Agriculture and Commerce, the Mediterranean, Adriatic, and Sicilian railway companies. In fact, in the War Office and Admiralty all the available posts are exclusively reserved for soldiers and sailors, amounting in number to 2285 in the former and 317 in the latter. In the remaining public offices half of the appointments are reserved, or upwards of 4645 posts, while in the railway companies at least one-third of the available berths, amounting to 1700, are filled by deserving non-commissioned officers.

There are some statements of fact upon which detailed comment would be really an anti-climax. This is a case in point. We close by simply putting this question to the authorities—How long shall England continue to neglect the legitimate claims of her soldiers and sailors who have served her faithfully, and how long, shall it be said with truth, that in the civil employ of her gallant defenders this country is immeasurably behind Continental Powers?

Reprints and Translations.*

MILITARY CRITICISM AND MODERN TACTICS.

By the Author of "The Campaign of Fredericksburg."†

(From the United Service Magazine, England.)

THE echoes of the triumphal march of their returning army had hardly died away Unter den Linden before the Prussian soldiers of '71 began taking stock of the methods in which they had been making history. They found, in the first place, that successful infantry attacks, generally speaking, had been carried out by swarms of skirmishers; that the only way of gaining ground, when once the zone of effective fire had been reached, was by feeding the skirmishers with constant reinforcements; and that, in a hotly contested battle, battalion had to be piled upon battalion in order to maintain the firing line at full strength.

Now the outcome of such methods as these, as Boguslawski says, was a return to "the combat of savages, who fighting without any regular order, rush in masses upon the enemy, wishing to come as quickly as possible to single combat." And he further confesses that "such a dispersion of the combatants does not contribute to our control over the fight nor to its quick conclusion." But these methods, with all their disadvantages, had been successful, and by the Prussians they were accepted as the true tactics of the breech-loader battle. Extreme disorder was held to be inevitable; and for a long time the only improvements suggested were a stricter fire-discipline and constant practice in fighting in a medley of different companies, battalions, and brigades. No change in formation was advocated. A single line of skirmishers, fed by the constant accession of small bodies from the rear, remained the normal disposition for infantry on the offensive.

These tactics were diametrically opposed to those that had been hitherto taught in England. The Prussians held that, not only was the attack to be prepared, but that the assault was to be carried out, by the skirmishers. A second line, except as a means of feeding the firing line, they considered useless. Our own authorities, on the other hand, held that the duty of the skirmishers was merely to cover the advance of the main-body, which, moving shoulder to shoulder, was to pass through the firing line and carry the position with the bayonet.

* Please address communications concerning reprints, translations and reviews to Lieut. J. C. Bush, editor of this department.

† Major G. F. R. Henderson, Staff College, England.

So soon as the experiences of the war of 1870-71 began to be discussed in England, the two schools of critics, alluded to in the preceding article, came into violent opposition on the question of the infantry attack. The first favored Prussian methods. The second held fast to tradition. The first, so far as numbers went, were much in the minority. The second had, perhaps, less skilful advocates; and, moreover, the details of the Franco-German battles were not then sufficiently known to enable them to overthrow arguments, which their antagonists based on incidents of the recent struggle. The conflict between these two opinions is a matter of ancient history. It is, nevertheless, interesting, not only as an instance of the tendency of criticism to touch extremes, but of the value of an instinctive regard for the lessons of the past. It was not that the more conservative school considered reform unnecessary, but it held that our former tactics were based on sound principles, principles that had withstood the practical test of many years of warfare and were not now to be lightly thrown aside.

There is no need to refer to text-books or theorists; the details of the Peninsular battles show us practically what was the traditional attack formation of the British infantry. (1) As a preliminary disposition, the troops were divided into three lines before they were set in motion. (2) The objective of each division was clearly indicated, either by direct instructions, or by the division being placed opposite that point of the enemy's position which it was to assault, and being allotted a space in the line of battle that it could adequately cover, and no more. (3) During the attack itself, the skirmish line was given a free hand, and the leaders of units were allowed to act on their own initiative. So fully was this last necessity recognized that Colonel Maurice, in his Wellington Essay, says that the regulations of 1870, based on the old skirmishing tactics, "although introduced before skirmishing had attained its present importance, appear to be compiled on as sound principles as if all the experience of the Franco-German war had been before the writers." What these tactics were may be gathered from Napier's account of the operations of the Light Division on the Coa. "Here, as in every other part of the field, the quickness and knowledge of the battalion officers remedied the faults of the general. * * * There was no room for a line, no time for anything, but battle. Every captain carried off his company as an independent body, and joining as he could with the Fifteenth and Fifty-second, the whole presented a mass of skirmishers, acting in small parties and under no regular command, yet each confident in the courage and discipline of those on his right and left, and all keeping together with surprising vigor." (4) The second and third lines in close order behind the skirmishers maintained their tactical unity throughout the advance. When the position was carried, no time was lost in resuming the original formation, and the troops were in a condition to prosecute a further attack, to follow up the enemy, or to check a counter-stroke. (5) The knowledge that strong supports were close at hand, and the very aspects of their solid lines and gleaming bayonets, not only added that element of moral strength to the attack which is above all things essential, but shook the *morale* of the staunchest enemy.

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Such were the principles, putting aside for the moment the consideration that the bayonet was expected to be the supreme arbiter of the fight, of our offensive tactics. The first and most important of these was the formation in three lines, preceded by skirmishers. In this, as I have already stated, there was nothing novel. It is recommended by Vegetius, the most ancient writer on minor tactics. It was familiar to the Black Prince. "Let us consider," he said, when the French were reported advancing on Poitiers, "how we can best receive them at advantage," and the English army was then drawn up in three lines of battle. Marlborough found it sufficient. It was abandoned at Fontenoy, and with it victory departed. It was invariably employed by Wellington. It had become traditionary in England, and no English soldier had hitherto doubted its efficacy. It is scarcely matter of wonder, then, that the great majority of English soldiers refused to be convinced that the Prussian system which, in almost every single respect, ignored the principles on which their own formations had been founded, could be anything but vicious. They were ready to admit that the new firearms had made modifications necessary, but they would go no further. They felt, truly enough, that the new methods absolutely invited the disorder which practical experience taught them was so great an evil, and that the evidence brought forward was scarcely strong enough to prove that there was no speedier means of carrying a position than by wearing out the defender by sheer stress of fire. However, the views of the reformers prevailed. The different editions of the Field Exercise issued between 1870 and 1888 followed, to a great extent, the lead of the Prussians. The line of skirmishers and its supports became the fighting line. The second line was merely to be employed to stiffen the fighting line prior to the final advance on the demoralized enemy. The skirmishers were to give the *coup de grâce*. In other respects the views of the conservative school prevailed. The leaders of companies were not allowed the same independence as in Prussia; and the retention of a second line in the hands of the battalion commander, and its advance at the critical moment in full strength, was calculated to preserve tactical unity and to render moral assistance at the right time. In 1888, however, although no new experience had been gained, and the introduction of the magazine rifle had even increased the power of fire, and had seemingly rendered further modifications necessary, the Field Exercise appeared under a new title containing radical changes as regards formations for the attack and the method of its execution. Radical, that is, with respect to the theories of the Prussian school that had been accepted since the fall of Paris. But radical in no other sense, for the present tactics of the British infantry are essentially those that were advocated by the more conservative school when the necessity of modification was first recognized, and are based on the same principles which tradition had handed down to us as sound. The attacking force is once more divided into three lines, each with a distinct duty. The skirmishers no longer bear the title of the fighting line, and whilst they have still the most important part to play in beating down the enemy's fire and breaking down his *morale*, the bayonet has once more asserted itself. To the second line, relying on the cold steel only, as in the days of the Peninsula, is entrusted the duty of bringing the

battle to a speedy conclusion, and of inserting, in the midst of the enemy's position, a body of troops in such unity and order as to enable pursuit to be rapidly taken up, a further attack initiated, or a counter-stroke beaten back. To this point the pendulum has swung. It remains for us to examine whether the tactical instinct, which has been already claimed as peculiar to our race, is in consonance with the teaching of recent history.

The most remarkable phenomenon of the wars of 1866, 1870–71 and 1877–78, was the extraordinary intermixture of units which took place during the infantry attack. Now, it may be granted that even in the days of muzzle-loaders the same confusion was by no means unusual. But it is open to doubt whether it has not been magnified by the advocates of the Prussian system. Colonel Gawler, one of the most reliable authorities as to the tactics of the Peninsula, asserts, indeed, that every stoutly-fought battle-field saw men of different companies, of different regiments, and of even different divisions, fighting side by side. But he refers only to the skirmishers. Colonel Home, again, brings forward the Alma as an instance. But the advance across the Alma, although made in three lines, was not conducted in the same fashion as the advance at Salamanca or Vittoria. But, in the first place, the troops of 1854 were unpractised in the movements of large bodies, however well-drilled they may have been in battalion. Secondly, the staff was equally inexperienced, and the front to be taken up by the first line was under-estimated by a thousand yards. Thirdly, the troops moved forward in line for more than a mile. In the Peninsula, on the other hand, the advance was invariably made in line of quarter columns until the zone of effective fire was reached. In fact, Wellington and his lieutenants knew that "columns," to quote Napier, "are the soul of military operations; in them is the victory, and in them is safety to be found after a defeat. The secret consists in knowing when and where to extend the front." Columns for the preliminary movement, line for the assault; a combination which assured strength, rapidity, and order, was the weapon of Wellington. Raglan relied on the line alone, and hence the confusion on the heights of Alma.

The Germans have preferred to recognize confusion as an inevitable evil, and endeavor to minimize it by training their men in peace to such control and obedience as is possible under such untoward circumstances. This they had done before 1870, and the system bore good fruit. To quote Colonel Maurice, speaking of the great war: "The distinction between the form in which the Prussians and French severally fought after each had begun to realize the necessity for change, was not that the French were less scattered than the Prussians; on the contrary, they are expressly said to have been much more so. The distinction was this: the Prussian training had prepared them to be in hand though scattered. The French, unprepared for any other use of skirmishers than an auxiliary one, were out of hand as soon as they were scattered." With the system which wrought such sound results, it is impossible to quarrel. It is one that is absolutely necessary. But it is well to ask whether it is all that is necessary. Is it not wise, whilst doing all in our power to evolve order out of disorder, to begin at the very beginning, and to endeavor to prevent that disorder

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assuming abnormal dimensions? The "battle-discipline" of von Boguslawski and other tacticians does not commend itself as a sufficient remedy even to their own comrades-in-arms. One German officer, at least, arguing from his own experience, has asserted, in no measured terms, his conviction of its insufficiency. In this respect there are few who are not disposed to agree with the author of "A Summer Night's Dream." It is his revolt against a procedure which has been instinctively condemned as vicious that has aroused so much interest in his revelations. At the same time, his proposals for improvement have not met with approval. They ignore the fundamental evils of the German system of attack. They upset the modifications of the pre-breech-loader era, which every school has accepted as necessary. They introduce others with which history and experience will have nothing to do; and they directly violate the principles which have governed infantry tactics since the wars of the French Revolution. In the first place, the author suggests that instead of the first line of attacking infantry being formed into a chain of skirmishers, allowing each man five feet in the ranks, it should be composed of a number of sections, each fifty strong, in single rank and in close order. His objection to extended order appears to be not so much that it produces confusion and the intermixture of units, but that it presents so many opportunities of skulking; and skulking, if his statements are to be swallowed, existed in the Prussian army of 1870 to a degree that was never heard of in a well-disciplined army of regular troops before or since. Now, extended order has been adopted as part of the infantry combat, not only, as the drill-book following Boguslawski, implies, that because within a certain range the advance in close order is no longer practicable, but for the following very excellent reasons:

1st. Extended order is especially adapted to rapid movement over ground made difficult either by natural or artificial obstacles.

2d. Fire action can be best developed in extended order. The men have latitude in the choice of a position, and have plenty of space wherein to use the rifle.

3d. Latitude in the choice of a position means latitude in the selection of cover; and this, combined with the facts that a change of position may be made with the utmost rapidity, and that "dressing" is not insisted on, as it must be in close order, renders the extended line the least favorable target for the enemy's fire.

The first objection to the proposals of this dreamer of dreams is that time, an important factor in the attack, where the chief endeavor is to pass over the ground and to get within effective range as speedily as possible, would be lost if, after the passage of every obstacle, the taking up or leaving cover, the sections were to be accurately dressed. 2d. That these sections, with a compact front of forty yards, and a wide interval between each, would invite a concentrated fire. 3d. That a shoulder-to-shoulder movement, if it is not allowed to degenerate into loose order, lacks the same rapidity as the rush of a number of men who have nothing to think about except reaching the next halting-place in the speediest and safest manner they can devise.

Loss of time and loss of life would be the results of such a formation.

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And sympathize as we may with his endeavors to restore "the bloody energy of battle," it is impossible to approve of unnecessary waste of vital power. Such methods are too drastic. The presence of the faint-hearted would scarcely compensate for the sacrifice of stouter hearts; and it is scarcely necessary to revolutionize tactics in order to check an evil, with which a few file-closers, aided by a copious vocabulary and the regulation revolver, would be well able to deal. The disorder which accompanied and followed the attack of the Prussian infantry in 1870–71, was not due, in great part, to the use, but to the abuse, of extended order; and this abuse arose from the want of preparation; the hurrying through or neglect of the preliminary stages; faulty dispositions at the outset, the impetuosity of all ranks, and the excessive independence of the subordinate leaders.

The truth is that, in many respects, the whole structure of the Prussian tactics of 1870 was fundamentally unsound. This sweeping statement is, of course, open to the objection that the regulations in force before the war made careful provision against the occurrence of the faults that there made themselves so prominent. There are two ways, however, of reading regulations. The one to master them so thoroughly that each has its due prominence in the mind, and therefore its due prominence in action; to become, as it were, instinctively imbued with the spirit of the whole. The other, the more universal, to regard only those which affect every-day procedure, such as drill, manœuvres, and inspections, and which are therefore thrust into undue prominence; relegating the remainder to the second place in peace; and consequently, as in times of excitement men act rather by habit than on reflection, ignoring them in action. That portion of our own Drill-Book which refers to attack and defense is merely the essence of tactics. There is not one single sentence which is not of primary importance, one single principle laid down that can be violated with impunity, one single instruction that should not be practiced over and over again. And yet how often, in the attack of a battalion, are the diagrams, intended merely as a general guide under the least complicated circumstances, the only things that are considered. It is not so much that the spirit is neglected for the letter, but that the constant attention to those rules in the daily work of the drill-ground leads to other rules and principles, less susceptible of methodical procedure, being overlooked. Certain principles are exalted to the exclusion of others. It was thus with the Prussians in 1870. The power of the initiative, the strength of the offensive, the excellent results of the company-column formation, had been dinned into their ears. They went into battle with their minds saturated with these ideas, and fundamental principles were cast to the winds. It is for this reason that the groundwork of an officer's education should be the tactical regulations; the drill-book, and the drill-book alone. When every word and every principle contained therein has been tattooed into his brain, theoretically and practically, so that it is impossible for him to act otherwise than in accordance with them, then, and not till then, let him be introduced to grand tactics and the operations of war. Let him learn how the individual soldier, the individual section, the company, and battalion, is expected to act in every phase of active service, and the knowledge he has thus acquired will render

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it easy for him to learn the art of independent command. Skill in placing his men in good position for using their rifles in leading them from cover to cover, in knowing when to close and when to extend during an attack, is of infinitely more value to the regimental officer than a knowledge of how Wellington crossed the Douro, or Steinmetz passed the defile of Nachod. Four weeks' company-training is a better education for a company leader than a year's study of Hamley.

However, if it is anything at all, the education of the Prussian officers is prëeminently practical. It would therefore appear that if they failed when brought face to face with reality, peace-practice is of little value in the field. But, as already mentioned, the Prussians derived much benefit in one respect from their peace-practice; and if in other respects their methods were vicious it was because the first principles of war had not become second nature; and that ideas, good in themselves, had been engrafted at the expense of others equally sound and even more important. Space does not permit more than a very general glance at the conduct of the earlier battles of 1870, but it requires no more than a brief survey to prove that fundamental rules were flagrantly broken, and that this was in great degree the cause of that confusion which the author of the "Summer Night's Dream" proposes to set right by remedies worse than the disease.

In the first place, the necessity of preparing the attack by a heavy artillery fire was habitually neglected, not by the artillery itself—it was always ready and always in position to carry out its duty—but by the subordinate commanders. The leaders of advanced guards never troubled themselves to give the gunners time to do their work. The action was generally begun before the batteries had deployed. So, at Spicheren, the infantry was moved off to the attack at the same time that the batteries came into action, although the Rotherberg, the point of the enemy's position most dangerous to the advancing troops, was open to a concentric artillery fire, and held only a single battery to oppose it. So, at Woerth, the advanced guard of the Eleventh Army Corps, before the French guns were silenced, sent four battalions across perfectly open meadows to assault the Niederwald, which, after penetrating the wood for a short distance, were repulsed in the utmost disorder. At an earlier hour, also, on the same day, the Fourth Bavarian Division attempted to move forward on Fröschweiler, employing four battalions for the purpose. After a brief march, "a shell and mitrailleuse fire prevented their further progress." There was no artillery in support. And even when reinforced by six fresh battalions, the attack, reading between the lines of the Official Account, appears to have come near disasaster. At Colombey, the advanced guard of the Seventh Corps rushed into action exactly as had done the advanced guards of the Eleventh Corps and the Bavarians at Woerth. At Gravelotte, the famous assault of the Prussian Guard upon St. Privât was not prepared by the artillery. Although 180 guns were in position against the French right, "the centre of the St. Privât position was still untouched when the First Guard Division advanced to the attack."

Before the French left wing, moreover, although the first rush of the Fifteenth Division on the Bois de Genivaux may in some degree be excused

by the determination of the infantry to gain ground for the advance of the artillery, its further attempt, when it cleared the woods, to move against the exceedingly strong line of trenches on the Point du Jour plateau was altogether premature. Here, then, is one important rule, which was in several instances utterly disregarded, and this by officers of the highest rank. Had it been observed, unity would have stood a better chance. It is not one of the least beneficial results of the preliminary artillery fire that it gives time for the infantry to deploy into line of battle; for the commanders to select and point out objectives, and to assign to each unit an adequate task in the coming struggle; as well as for the leaders of the latter to examine the ground over which they are to move, and to devise measures for doing so in the method most conducive to economy of life and development of fire. If these preliminaries are neglected, either from the premature action of the advanced guards or by the impatience of the commanders, disorder asserts itself from the outset. And, as we have seen, they were neglected by the Prussians under circumstances which were no excuse whatever for their so doing. This, then, was one reason for the confusion and impossibility of control which the "Summer Night's Dream" laments.

But, to make matters worse, even when time was available, the dispositions of the Prussian leaders, so far as regards the infantry, were generally faulty, often insufficient, and sometimes left to chance. Now, the disposition of infantry for battle must inevitably exercise a very great influence on the progress and issue of the engagement. Where it is in harmony with tactical principles, the result is concentrated energy, concerted action, and such order as is possible in the heat and excitement of the conflict. Where these tactical principles are departed from, we find want of combination, isolated enterprises, lack of strength at the decisive moment, the dispersion and intermingling of tactical units, and the control of the troops taken out of the hands of the superior leaders. In one of the ablest and most practical works on tactics that has ever been written, General Verdy du Vernois, indirectly criticising the Prussian leading of 1870, lays the greatest stress on two points. First, in his comments on the supposed action near Trautenau, he thus speaks of the action of a brigade, and his remarks apply equally well to the army corps and the division:—"The position of the brigade before the commencement of the action was by wings, which would allow of a well-regulated guidance during the course of it, and permit the regiments being kept separate. When the first line came into action it occupied a front of about 2000 paces; had this been formed from a single regiment, its commander could not possibly be at every point where his presence was required. * * * Again, when the reinforcement of the first line became necessary, the second regiment of the brigade would have to be brought up —portions of it pushed into the first line. A mixture of the two regiments must ensue, and their commanders will have to pick out their companies as they may require them. The dispositions of the two commanders will then almost inevitably clash with one another, and the full power of the troops will not be brought out. * * * Of what use is the compact coherence of a regiment if it is to be abandoned at the very moment that the most severe test is before it, just as the real action commences?" "Lateral extension," he adds, "does

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not admit of the connected conduct of portions of troops belonging to the same body, nor of their being brought into action as required; and the only way to ensure this, is to form them in rear of one another." It is true that this formation can only be adopted by the larger units—army corps and divisions—when the country affords facilities for movements on a broad front. But in the actions of August and September, 1870, these facilities often existed. They were seldom utilized. At Gravelotte, indeed, the orders issued by the Red Prince for the corps of the Second Army to advance in mass of divisions brought the Saxons into contact with the enemy just in time to win the battle; but along the front of the Ninth Corps and of the First Army the disorder was great, for each brigade and each division were deployed to their full extent, and the reinforcements that came up were in many cases supplied by troops that belonged to different army corps, and even different armies. At Spicheren the commander of the Fourteenth Division extended his leading brigade over a front of nearly 3000 paces, whilst he sent the other to strike the enemy's rear. The enemy, bearing heavily on his front, reinforcements drawn from other army corps and another army were sent in piecemeal, and hence arose the historic intermingling of thirty-two companies in inextricable confusion on the Rotherberg and in the Giferts Wald. It is useless to multiply instances. "A connected leading," says Verdy du Vernois, "can only be effected by deepening the formations. The troops fighting in the front line must be furnished with immediate supports belonging to the same tactical units as themselves, for without this precaution a joint action of the whole cannot be produced. * * * Whenever, in the campaign of 1870, this principle was overlooked, a connected conduct of the action was rendered impossible, and the ill consequences resulting from it could be traced in almost every case." I have already quoted von Moltke to the effect that the maxim "Aus der Tiefe zu fechten," was generally neglected.

"Science in a pickelhaube," says General Dragomiroff, "has taken possession of the field of battle; * * * but there is nothing to make a fuss about in all the pretended revelations of the science of war. Modern tactics remain substantially what they were in the days of Napoleon. Napoleonic tactics rested on a firm basis, since they consist of principles which can never be affected by changes of armament." One of the primary principles, a principle as often as not carried to excess by Napoleon and his marshals, was in the depth given to tactical units. This principle the Germans in 1866 and 1870 entirely ignored. Generally speaking, the attack was carried out in two lines. This formation was almost invariably employed, whenever, that is, special dispositions were made preparatory to thrusting a force into action. Now, science had arrived at the conclusion that what are practically linear tactics are best adapted to present conditions; with this difference, that the line should be elastic instead of rigid. But, from the very first days the line was employed, it had never been considered sufficient, save under exceptional circumstances, to leave the line unsupported by less than two other lines in rear. This was the formation approved by Wellington, than whom we have yet to learn there has lived in modern times a more able tactician. This principle the Prussians departed from. So great was

the lateral extension of every unit, that there were seldom troops remaining to form a third line or reserve for either brigade, division, or army corps. And when we read in the history of 1870 of the failure or, at best, the indecisive success of the infantry attacks, we shall find, if we examine the details, that the cause of such failures or indecisive successes was that support was not forthcoming at the critical moment. The formation had not depth enough to push its way through the storm. Secondly, the duties of the second line were ill-defined. In conjunction with the fighting line it was expected to assault the position; but, being under no special command, it gradually drifted into the fighting lines by fragments as gaps occurred; it seldom, if ever, remained intact at the critical moment, and it certainly never exerted a decisive influence at that moment. In fact, the over-prominence given to the old rule that all strong positions should be turned and not assaulted in front, brought about a constant tendency to increase the front, and the second line was, consequently, generally employed to fill the gaps left in the first line by the divergence of the skirmishers to right and left. In the older tactics, if a position was to be turned, special troops were detailed for the purpose, taken from the reserves; the duty of the first line being to occupy the enemy in front whilst this was being done. Had this principle been held to by the Prussians, the first line would have remained a compact body, strongly supported by the second, and the danger of their lines, extended over a wide front, which, as Captain May pointed out, resulted in the disasters of Trautenau and Langensalza, would have been avoided. Perhaps the repulse of the right wing at Spicheren is the best instance in the war of 1870 of the evils resulting from over-extension and the neglect to keep in hand a strong reserve. Shortly after five o'clock the attack on Stiring Wendel came to a standstill. 29½ companies (7250 rifles at full strength), generally speaking, in a single line, invested the northwest side of the village on a front of nearly 3000 paces; that is, allowing one-fifth for losses—and their losses had been heavy—there was not more than one rifle available per yard. A great portion of the troops were exhausted with severe fighting and long marches under an August sun; and when, below the opposite slopes of the Spicheren wood, a French column was seen in motion, the whole line, with the exception of a small force that clung obstinately to the Stiring corpse, gave way in confusion.

A second error which intensified disorder, and which applies to the individual battalions, even more to the brigades, was the undue extension of the front. More often than not, battalions, even whilst as yet exposed only to unaimed fire, or even when not under fire at all, deployed into line of company columns at intervals of eighty paces, and advanced covered by the four skirmishing Züge. This exaggerated application of the principle of the development of fire brought many evils in its train. The Prussian company officers, as stated in a previous article, had given ear to the theories of Captain May in his "Tactical Retrospect of 1866." They saw in the new doctrines which advocated the almost complete independence of the company leaders boundless opportunities for personal distinction. When the battalion deployed, each captain found himself with his compact unit of 250 rifles. Orders, very probably, could no longer reach him. At all events, the voice

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of the commander was soon drowned in the rattle of the breech-loader. The company had become free from all control or interference. It was in the hands of its own leader to do with as he pleased. Not the slightest tie bound it to its battalion. If it was in the direst straits the battalion could not stretch a hand to help it. The commander could not send a single rifle to swell its ranks, for he had retained no second line in his own hand. When the battalion went into action without a reserve, every link that bound it together as a unit snapped; and the line of battle became formed of a number of small bodies, each fighting for its own hand, and wandering to and fro across the battle-field as the judgment or ambition of its immediate leader might dictate. Nor were single Züge always to be restrained. Unreasonable initiative often carried them far away from their companions. It is little to be wondered at, then, if the individual soldiers, when they saw their superiors part so lightly with the bonds they had been taught to deem inviolable in peace, were only too ready to free themselves from supervision and restraint.

Another cause of confusion was the habit the troops acquired of swerving to one flank or the other in order to seek cover, and thus abandoning the line of direction. This was not confined to individuals; but whole companies, or the greater part of whole companies, acted in this respect with wonderful unanimity. When we study the battles of 1870 with maps and books, we are often at a loss to account for the devious wanderings of various companies. If we study the battles on the ground itself, the cause is soon revealed. Tiny depressions, commodious ditches, convenient banks, although often at right angles to the true direction, clearly mark the reason and the course of these meanderings.

Cover exercised a magnetic influence, to which the unity of the battalion, disregarded as it was both in theory and in practice, opposed no counter attraction.

Well has it been said that "the company leader who, regardless of losses, carries out the task assigned to him, is a better servant than the company leader who manœuvres."

Lastly, General Verdy du Vernois may be summoned as evidence to prove that dispersion being accepted as an inevitable and at the same time a minor evil, the Prussian officers neglected opportunities for restoring tactical unity. "The experience," he says, "of many of our own late battles show us practically that, after successfully overcoming any difficult phase, the last thing thought of is to restore the formations of the shattered troops, and to reform the masses ready for further employment. This point should not only be attended to at critical moments, but should also be kept constantly in view during the course of an engagement itself." Again, and be it remembered that the whole of his book is an indirect criticism of the war of 1870, "care must always be taken to reform as far as possible behind such cover as may be met. When the nature of this will admit of it, the companies should be drawn closer to one another again, or half-battalions or even battalions reformed."

Such is the account of the German shortcomings in 1866 and 1870. That their own critics have not been backwards in exposing these short-

comings, is true. May, the great innovator, Verdy du Vernois, and the author of "The Prussian Infantry in 1869," of "The Frontal Attack of Infantry," of "The Tactics of the Future," and of "The Summer Night's Dream," to mention but a few, have all of them held a brief against their own comrades. To expose these shortcomings is to repeat a twice-told tale. And, moreover, suddenly confronted by the havoc wrought by the fire of the Chassepot, a fire which did not come within the bounds of their experience, it is little wonder that they failed to devise, then and there, on the field of battle, the tactics best suited to this unexpected emergency. But with this we have no concern. The point to bring home is this: that the confusion of the Prussian battles was, in a large degree, due to their neglect of the immutable principles of tactics, and that, therefore, in regard to tactics, they are a bad model for us to follow. The sagacity of our own people is a surer guide, and if, after 1870, we wanted a model, the tactics of the last great war waged by English-speaking soldiers, would have served us better. At the same time, it is important to recognize that confusion, even to a very great extent, will be sometimes unavoidable. It will be absolutely necessary, in order to prepare the way for the bayonet, that battalion must be piled on battalion. At all costs, the firing line must be kept at sufficient strength, and to this intermixture of units the Germans are wise in constantly practicing their troops.

In a concluding article the tactics of the American Civil War will be compared with those of 1870-71, and an endeavor will be made to demonstrate the strength and adaptability of our own formation for attack.

(*To be continued.*)

CHANGES AND PROGRESS IN MILITARY MATTERS.*

By Lieut.-General TH. v. JAROTSKY.

Translated from the German by Lieut. A. S. Frost, 25th Infantry.

CAVALRY.

SINCE the days of Berthold Schwarz the fighting power of cavalry has steadily declined. Its defensive power, mounted, with *l'arme blanche*, against an enemy on foot and armed with the rifle, must diminish in the degree that the latter succeeds in improving his weapon and increasing its range and precision. *L'arme blanche* is scarcely susceptible of further improvement and the limit of the horse's speed is already reached. True, the genius of a Frederick joined with the dashing spirit of a Seidlitz made the Prussian cavalry a decisive instrument upon the battle-field in warding off approaching disaster. Still, this was but temporary; for the infantry freed from the shackles of the linear tactics, soon robbed the cavalry of its laurels. Even in the wars of Napoleon, great and decisive cavalry charges seldom occurred and the rapid strides of the

*Colonel von Löbell's Annual Reports upon Changes and Progress in Military Matters During 1892.

artillery arm have completed the revolution and consigned cavalry to the third place upon the battle-field.

About this time, however, a new rôle was assigned to cavalry in the art of war,—strategic reconnoitring. This first became necessary with the calling forth of armies from the masses, the "nation in arms," because of the universal conscription or duty of bearing arms. Formerly armies knew each other's strength; one prince could count the mercenaries maintained by the other in time of peace with the certainty that there would be no material increase in the event of war. The slowness of movement and the magazine system, sufficed of themselves to make known, not only the number but also the camp of the troops, without a resort to cavalry reconnaissance; while the level linear battle-fields facilitated the discovery of the dispositions and intentions of the enemy. Even the reconnoitring of a "Zieten out of the bush" was nearly always purely tactical.

Bonaparte changed all this; he moved great masses with a rapidity previously unexampled; his bad cavalry under good leaders accomplished strategical reconnoitring with a completeness which since then has scarcely been attained upon a European theatre of war. The next five decades of peace in middle Europe brought the training of this arm to a standstill; the *technique*, "the petty tactics in which more high officers shine than in the true military training," (Scharnhorst) crowded out the sterner requirements of war.

The sins of omission in 1866, in striking contrast to the usefulness of the American cavalry and to the activity of a Stuart or a Sheridan, first demonstrated what was needed.

1870-71 showed on the German side, the beginning of an extensive cavalry reconnaissance far to the front of the army. The path then trod has since been followed by all the great powers. The next war will show the cavalry divisions in collision at the front, and the victor will reconnoitre and weaken the enemy in flank and in rear. Only smaller bodies—divisional and corps cavalry—will perform the service of security and information in close connection with the other arms, and, during the battle, these will be ever on the watch for rare and exceptional moments and, above all, will be kept well in hand for the attainment of tactical results.

So far as here indicated, opinions seem to be tolerably clear; the object of the cavalryman's efforts is to a certain extent fixed; still there is much disagreement as to the ways and means for its attainment. Upon the one side stand those who see the true solution only in the most perfect training of man and horse, who fear that the efficiency of the mounted service will be prejudiced by practicing the functions of another arm, and who demand a perfect separation. With these, the drill discipline of the troops, the ability of the leaders to execute with refined nicety the many movements of the échelon drill, expertness with *l'arme blanche*, thorough training for the difficult mounted combat, and battle and tournament exercises of all sorts with the lance, occupy the chief place; while dismounted fire-action, foot-drill, patrolling and field duty, pontoon and telegraph service, are regarded as of little value and performed with less love.

Those who plead for another system would have the cavalry prepared

for anything. By simplifying the mounted drill wherever possible, time will be obtained for other training. The higher horsemanship will vanish from the riding school and the more difficult manœuvres from the drill regulations. "Thus the cavalry will seek to compensate for what it has lost in fighting power against the other arms by mobility and versatility."

A review of the year should not be controversial, and yet it is quite impossible to make a colorless and unprejudiced review of disputed questions which vex every cavalryman's soul. In the reviews of 1890 and 1891 the first party had sufficient cause for reply. While the writer has no intention of expressing the opinions contained in the other reviews, he believes, after an observation of the cavalry signs of the times, that they will be more and more accepted and will find their justification in the next war. The simplification of regulations and forms seems possible without the slightest prejudice to good riding. That drill system is to be combatted, which, in the interest of drill-discipline and for the purpose of making troops and leaders dexterous, practices forms in peace which will not be available before the enemy.

The cavalry, as well as the infantry, should have at the head of its drill regulations these golden words: "The simplicity of a regulation in form and principle sustains thoroughness of training. * * * The training follows correct principles when the troops are equal to the requirements of war, and when nothing learned upon the drill-ground has to be stripped off on the field of battle."

Upon such principles the progress, or decadence, of the cavalry of the principal armies is considered. In order to give a clear and connected account of this it will sometimes be necessary to refer back further than the course of the year, especially where previous reviews have been incomplete.

THE DIFFERENT STATES.

A. Germany.—Since 1870 the German cavalry has labored to make use of the experiences of the late war. The great utility of closed divisions, held well in hand by their leaders, was recognized; and, while increasing the intrinsic value of the arm, the leadership of great masses was also kept in view, and year after year a number of cavalry divisions were assembled for combined practice; one such body was always kept on the eastern and another on the western frontier as a permanent corps.

From this there was formed a tactics of the great cavalry manœuvres. A few gifted generals soon began to exercise command; for these manœuvres were repeatedly turned over to them, as recognized instructors, and they sought to perfect the forms and the art by many refinements. The half-column, introduced in the early seventies for the purpose of shortening the distance in the deployment by substituting the diagonal march for two ninety-degree wheels, was exceedingly well adapted for increasing and beautifying the evolutions; the échelon formation afforded opportunity for highly elegant exercises—to the few who mastered them. Wide, level plains were naturally preferred, and—as the manœuvres were held within their limits—the employment of masses in battle, and normal forms of attack

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upon cavalry, infantry and artillery were almost exclusively practised. The normal ideas developed by this system found their death-blow in the regulations of 1877, as well as in the not materially changed edition of 1886, which added a few directions to division commanders as guides for their exercises. Fixed forms, "after celebrated examples," found a home upon every drill-ground; the example laid down in section 169 of the regulations regarding formations for the attack, became a fixture at drill. On leaving the scene of the exercises for the great manœuvres, these movements, of course, were never employed; because the normal distances and intervals of the drill regulations could only be applied in the very exceptional case of level ground.

The light batteries followed the manifold movements of the exercises, as far as practicable, fired duly at the first line of the enemy, and then, with the calmness peculiar to this peaceful war, watched the issue of the *mêlée*. The same performance was enacted at the next sham fight. This use of artillery as compared with earnest warfare was well described by a distinguished authority of this arm as "chiefly acoustic." The pioneer detachment was seldom employed otherwise than as markers for infantry.

On the other hand, long distance reconnoitring, the dismounted fight—hardly possible for cavalry on open ground—the information service, the overcoming of obstacles, with the exception of a few exercise ditches, were almost wholly neglected because of the shortness of the time allowed. And, what was graver still, the "special cavalry manœuvres" did not bring this arm in touch with the other two, or afford a knowledge of their needs or of the duties of the three arms combined.

These dangers were accordingly recognized, the first result being the dismemberment of the two frontier cavalry divisions. Simultaneously that question began to be agitated which freed the cavalry from the shackles of forms and brought to the artillery and infantry the regulations of 1888. For the fight it was laid down that, next to speed, mobility was the most important quality for cavalry; this, however, was not to be attained by practicing excessively difficult evolutions, but by building, upon a few warlike exercises, an understanding between leaders and troops that would stand the test of fire; and further, by educating the subordinate leaders to decide questions for themselves, so that in the uncertainty of battle each would be able to make a rapid change to meet new requirements,—"in cases where necessary, to leave the forms of the regulations which only provide for the simplest cases" (Inf. Regs., 1888). For, when disordered and thrown together by necessity, a good cavalry must move with the same certainty as when in the normal formation.

From the union of speed and mobility it follows that surprise is the chief means of success in the cavalry combat. To aid this the least noisy mode of communicating commands is necessary, passing from motion and sign to the short call, from this to the command, from command to bugle call, *i. e.*, from the lowest to the loudest. The leader will only pass to a louder call when the first is insufficient; in general, the bugle call will only be used in presence of the enemy when the approach can no longer be hidden.

In moving to the attack the great importance of keeping the troops in hand until shortly before the shock, was recognized. In order to execute changes of direction and make use of the ground, the deployment into line is to be delayed as long as possible. Breaking to the front, and flank movements in the vicinity of the enemy are to be considered in connection with the danger of being struck in the flank. Above all, in the presence of the enemy, wheels upon fixed pivots are to be avoided; they always require several bugle calls or commands, and break the force of the movement.

The turning of the head of the column suffices for all changes of direction which are not executed from the halt and upon the base line. The half-columns and the échelon formations before the enemy, are entirely superfluous and to be omitted from the regulations.

For the attack upon infantry fixed forms have been more and more departed from. Battle situations, positions, marching formations, moral crises, and lack of ammunition on the part of the enemy, will influence the choice of the form of attack as much as the country, the ground and the weather. Line, column and extended order will each come into play according to circumstances. Formations which will cripple the enemy's,fire-leadership or scatter his fire, *i. e.*, such as the offering of many small targets to his aim, are most favorable to the avoidance of loss in the advance. Of much more importance than the formation is the choice of the right moment in attacking infantry. The deployment of all closed bodies, the mixing of units in long thin lines, the difficulty of a common battle and fire-leadership, the throwing in of the last reserves, the rapid expenditure of ammunition,—all these characteristics of the modern infantry fight make it possible to spy out the moment when a shattered body of foot will, even to-day in exceptional cases, fall a prey to a clever and determined cavalry assault. A cavalry attack against infantry that is unshaken or covered by difficult ground must of course be regarded as entirely objectless, and even in the most favorable cases, not worth the loss. During the battle the General in chief must always bear in mind what important tasks, after the tactical decision, will be required of cavalry and how difficult it will be to make up the losses of a very few minutes. The yearly review of 1890 says: "The possibility of results against infantry in battle order will still be entertained by cavalry according to the limitations of the situation." And this is not to be gainsaid to-day. But as to the value of such results well-founded doubts have latterly arisen.

These, in general, are the views in vogue of late years concerning the cavalry combat and which now have full sway upon the drill ground. That there is still much disinclination to neglect military horsemanship or to sacrifice the offensive power of cavalry in the slightest degree, is shown by the general armament with the lance, which for every service, except the mounted combat, is an encumbrance. On the other hand, the issue of carbines to the entire cavalry seems to show that all the manifold duties of modern cavalry are to be simultaneously demanded of them; all kinds of mounted troops are to be uniformly armed.

As to uniform clothing there is still much disagreement; considerations

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of tradition should have less weight than the difficulty of reforming a cavalry division after a general attack. Our famous old infantry regiments of the line will best live up to their traditions without glaring uniforms. We will be forced to change our far-gleaming cavalry costume—the white tunics and red attilas for darker colors.

Unfortunately the heavy swords and sabres are retained along with the lance; the urgent necessity of lightening the rider's equipment is only recognized by the introduction of a somewhat shorter sword and the trial of the plan of fastening it to the saddle; but this has not been fully adopted as yet.

The dismounted fire action of our cavalry, in spite of its being armed with a magazine carbine, has not advanced to a very high degree. The shooting and general efficiency may be classed as average. In general, there is lacking a knowledge of the proper fighting formations and the time and place for their use, as well as the knowledge gained at target practice. There is also lacking, as remarked above, a proper appreciation of this duty on the part of cavalrymen. Still, its importance is becoming more appreciated from year to year, and the conviction is growing that the regulations therefor should not, as heretofore, be issued from the standpoint of the infantryman, but from a due consideration of the nature and needs of the cavalry arm.

A contribution for the "Cavalry Tactics" of this review, lays down the following principles, which, as they are partly new, we quote in full:

"1. The speed and mobility of cavalry enables it to seize upon distant outlying points and open a rapid and unexpected fire which will cause the enemy to overestimate its strength. This employment of cavalry has increased in value since the introduction of improved small-arms whose use requires little skill, and the invention of smokeless powder, which will make it difficult for the enemy to estimate the strength of the firing line.

"2. Upon the other hand, owing to the led horses, this method of fighting is, now as before, limited to certain situations of battle and certain varieties of ground. The cavalry leader who dismounts to fight must bear in mind: first, that the loss of one man entails the unserviceability of another, *i. e.*, the one who leads the riderless horse; second, that if his led horses are reached by a few of the enemy's shells or troopers, they will be stampeded and seen no more.

"The situation regarding the led horses will be the measure of the number of carbines put in the firing line. If they can be placed in a position of no danger, few horseholders will be required and only two or three for each Zug will be left behind; but if a certain mobility of the horses is required it will not be advisable to dismount more than two-thirds of the troopers and often only one-half. The wish to have the led horses near to the firing line so as to quickly remount will not always be consistent with safety; still this may be attempted when separated from the enemy by an impassable obstacle; under such circumstances, against a dismounted enemy, full cover may be found for the horses in a court or stable.

"In most cases, a mounted reserve will be provided so as to prosecute the reconnoitring and tactical duties during the fire action. It will not do to

give the protection of the led horses to the reserve, for this duty would be imperfectly performed and would interfere with the other duties. If special protection is needed this will be best afforded by a selected group of dismounted men.

"The result of the hindrances above mentioned will be that the dismounted fire action of cavalry will in most cases be limited to the defensive. The offensive will be forbidden because of the great losses it entails and which cavalry cannot afford to risk in view of its far more important strategical functions.

"In dismounted fire action it will be better for the trooper to keep his lance by him, since it hinders him little, while it does make the movements of the led horses very difficult, particularly in woods.

"The particular arm attacked has a great bearing upon the dismounted fire action of cavalry.

"Against approaching cavalry a sudden and annihilating fire will be delivered, therefore, the fire will be delayed as long as possible. Should the opposing cavalry attempt to dismount, this moment of weakness should be taken advantage of to charge with the reserve or to aim a blow at the led horses.

"Against infantry, fire should be opened at long distances for its demonstrative effect. Smokeless powder will make it difficult to judge of the strength and arm of a long, thin, and well covered firing line; and it will already have achieved results when it has forced the enemy to halt and deploy. The holding of defiles until the arrival of its own infantry will, in this manner, often be successful. By clever use of the ground, opportunities will often occur for a stroke at the flank of the enemy's marching columns. An engagement with infantry at short range must always be avoided unless extraordinary circumstances demand the sacrifice of the cavalry. Such a conflict will usually lead to annihilation, as the usual battle unit of infantry—the battalion—exceeds in number the firing line of an entire cavalry brigade. The firing line must never be forced back upon the led horses. To mount under fire is impossible. Therefore the retreat before infantry will be made by sections and at a considerable distance. A gradual diminution of the firing line will long be concealed from the enemy if the remaining troops increase the rapidity of their fire. In especially favorable ground, a few files will continue the resistance while the greater part of the troop mounts and prepares for further tactical effort.

"The carbine plays an especially important rôle in affording security at night. Village approaches, well barricaded and occupied by dismounted men, will afford better protection to a cantonment of cavalry than outpost duty, to say nothing of the saving of the horse's strength.

"Finally, it may be said that the strengthening of a cavalry position by artificial cover will be more rare than with the other arms; still the pacing and marking of distances in the foreground will, when possible, never be neglected."

Hand in hand with the change of opinion upon dismounted fire action, comes a like change regarding horse artillery. Its work upon the cavalry drill-ground (see above) in close connection with the attacking regiment,

is more and more looked upon as a parade evolution and as not sanctioned by the experience of war. The new Field Artillery Regulations of June 27, 1892, recognizes this when, in the combat of cavalry versus cavalry, it requires a position for the accompanying battery safe from direct attack. As such positions are seldom found on ground favorable to the attack of cavalry masses, horse-artillery will mostly confine itself to supporting the deployment of its own regiments and crippling that of the enemy from greater distances, and will cease firing at the moment of attack. It must remain away from the hand-to-hand fight; for, in case of a favorable issue, it may be able to make an escaping portion of the enemy incapable of movement, if not incapable of fighting.

The batteries will find their principal opportunity in the reconnaissance of the cavalry division, where they can strengthen the defense of localities and defiles or break that of the enemy and force him to show his strength. (Field Artillery Regulations No. 340.) When united with the dismounted fire of cavalry especially good results may be secured.

Also against great bodies of mixed troops upon the march, or at a halt, horse artillery will be in a condition to work effectively. An especially important rôle falls to it in the cavalry engagements of the retreat and of the pursuit.

Its powerful fire and great mobility enable it, on the one hand, to hold its ground until the last moment; and, on the other, to continually annoy the flanks of a retreating column and force it to halt, leave the road and deploy; and, in case of a counter-attack, to escape with celerity.

The cavalry, for its part, will here use dismounted fire to advantage. In this way the commander of a cavalry division will find opportunities, upon a small scale, for the employment of the three arms combined.

The wish has often been expressed that the horse-artilleryman would change his sabre for a carbine with a bayonet, to be carried on the horse after the manner of the cavalry, to be retained when the piece is dismounted, and slung over the shoulder or stacked near by during the service of the piece. No further argument is needed as to which weapon will be most serviceable to horse artillery in battle or in quarters; and yet there is in the ranks of the horse-artillery itself an opposing party which will not forego the "cavalry attributes," and which regards the carbine with contempt.

The normal functions of infantry attached to cavalry divisions are in Germany unchanged and limited to those occasions where good roads and convenient transportation permit single companies or battalions, without extra precautions, to follow and support the moving cavalry. At the close of the year 1890 there was a short cavalry exercise with the IV., XII., XV. and XVI. Army Corps, the first great strategical reconnoitring practice in Germany. With the utmost secrecy regarding the point of egress, the divisions were pushed toward each other at a distance of 120 km., cover was availed of after the manner of the exercises, and the troops were subsisted, as far as possible, as in war. In 1891, similar manœuvres were held in two sets—one of them at the Imperial Manœuvres. In 1892, these were not held owing to the cholera.

The instruction which these manœuvres afforded to troops and leaders, finds its principal value in this, that the entire German cavalry substituted for the ideas and appearances of the drill ground a truer conception of the nature of war. The most important rôle of modern cavalry, with which its very excuse for being stands or falls, was for the first time clearly perceived; namely, that the victorious attack, if a necessary condition, is not the final end of cavalry action, and that its most important duties lie beyond the battle-field.

These manœuvres also led to the conviction that modern cavalry needs greater endowments and a more extensive training than heretofore in order to move with freedom and independence. Streams form its principal obstacles. The instruction heretofore given in bridge-building and swimming, receives increased emphasis. From this it will follow that after a few drills of the men, bodies of horse in boats or swimming guided by a skilful rider who grasps the mane with one hand and holds the reins in the other, will cross broad streams with little difficulty. This new and important experience, of which military history affords nothing that we can lay hold of, led to the introduction of two three-compartment twenty foot, double-walled, canvas boats, stretched upon a wooden frame after the English pattern; each carries 6 to 8 men with their packs, while the horses swim with the boats. The boats and appurtenances may be carried on a four-horse wagon along with the baggage of the regiment. With the aid of the side and bottom boards of the wagon they will carry a gun and its carriage, or three horses and riders or a Zug dismounted. But of more importance than making a ferry, or swimming after a boat (the latter not being practicable in cold weather) is the rapid bridge-throwing now practiced by our cavalry. A bridge three meters wide for dismounted cavalry in sets of twos at distances of a horse's length, and also passable for field pieces with four horses and their trains, can be put up for a length of 12 meters by the material of one regiment, 20 meters by that of two, 28 meters by that of three, 36 by that of four, 44 by that of five and about 50 meters by the material of six regiments.

Each regiment can put up 20 meters of bridging one meter wide in case there is good anchorage and the current is not too strong.

The endurance and military value of these boats have been established by careful tests.

For several seasons men in the second and third years of service have been trained in cavalry, pioneer and pontoon duty by attached officers and non-commissioned officers of pioneers.

The water training of the cavalry has been zealously prosecuted; in summer, swimming, as far as possible, takes the place of gymnastic exercises; this results from the experience that only a good swimmer can act with calmness and intelligence in the water.

For demolition and construction and the passage of streams, the cavalry division will always find a pioneer detachment very useful when at hand. Our present regulations contemplate that these important troops shall operate on foot or be carried by three requisitioned wagons—the tool-wagon making a fourth. The cavalry manœuvres have demonstrated that

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by this arrangement the pioneers are unable to meet the demands of the cavalry. Mounting the 32 pioneers is out of the question for the care of the horses would lessen their working value by one-half. If one would really have them at hand in the field and not lose them irreparably at every departure from the road or at the first long march across country in active service, three suitable four or six-horse wagons should be provided for them. These would make the tool wagon, already half-loaded with the pioneer equipments, unnecessary, and, in the end, lessen the impedimenta of the cavalry division by one wagon. As, besides the equipments, the tools could be divided and stowed away in the three transport wagons, it would be possible to detach one or two-thirds of the pioneers to operate with a part of the division.

Such an improvement of the pioneer service would be of great advantage to the cavalry telegraph service, which, under present conditions, ekes out a miserable existence. Even at the time of its introduction it was asserted that the practical peace practice would be difficult to execute from the want of a proper conducting wire. Since then thorough experiments during the great reconnoitring manœuvres have shown that, in spite of all improvements, without a special conductor its usefulness in war would decrease to the vanishing point (each regiment has only 500 m. against the infantry division's 22½ km. of conducting wire.) In this respect the transport wagons of the pioneers would come into good play; for they could be arranged for the operation and building of telegraph lines like those of the infantry division's telegraph. Nowadays we are looking for a good, well-insulated aluminum wire which can be carried upon the horse in considerable lengths.

In the discussion of technical questions a new Kriegspiel apparatus may be mentioned which received favorable notice in the *Militär-Wochenblatt*, No. 100, 1892. Instead of flat stones, cavalry figures, carefully made to the scales 1=8000, are employed which can be combined so as to represent the principal tactical formations. The best success, to our mind, is with the cavalry figures; these represent the columns of march, the Zug column, regimental column, and are of value in the training of non-commissioned officers.

The "Field Service Regulations" is a model book, and comparable to the infantry regulations in arrangement and contents; still, within the last year, a few important changes have been made. Under the heading "Advanced Guard" (I, 72) appears the following: "As soon as touch is had with the enemy, reconnaissance will be the principal duty of the divisional cavalry. If a favorable opportunity offers, its tactical employment is not precluded. The necessity of supplying reconnoitring cavalry in sufficient strength to the fighting infantry must be kept in mind by independent bodies of cavalry." This replaces the old rule: "As soon as in touch with the enemy, the tactical employment of the cavalry takes the chief place, but, even then, the reconnaissance must be uninterrupted."

Further on (I, 77) under "Advanced Troops," the following is inserted: "Cavalry is to be distributed so that it can prosecute the reconnoitring in the vicinity of the roads marched upon so that it will not be necessary to furnish infantry patrols for this purpose."

The insufferable "peace bravery" which leads cavalry to make repeated attacks, sacrificing all connection with the other arms and neglecting their needs, has finally led to this regulation. Napoleon's opinion upon this point will here be of interest: "They (the cavalry detachment assigned to the infantry division) must have such poor horses that they will not think of attacking."

Under "Reconnoitring of Divisional Cavalry," this principle is laid down: "No independent body of troops, down to the size of a battalion, will be left without cavalry for reconnoitring."

More and more stress is laid upon the practice of reconnoitring at long distances; the officer on patrol might better leave his sabre and revolver at home than his field glass. In regard to the present training of a squadron in recognizing and announcing the enemy's troops, a very good article appeared in the 5th supplement of the *Militär-Wochenblatt*, 1892, entitled, "Training of the Cavalry in Reconnoitring." The author very justly observes, that, with cavalry in general, security service and topographical reconnaissance, as opposed to the problems of greatest importance in war, and orienting of large-scaled maps, as against the development of the natural faculty of locality, are given too much weight.

The increase of the infantry and its increased need for reconnoitring cavalry has (as laid down in the reviews of 1890–91) led to the necessity of increasing the cavalry. The proportion of these arms in peace is 10 to 1, and when the powerful reserves, Landwehr and Landsturm, are called out in war, the proportion will sink still lower, to about 20 to 1.

Still, on the basis of what we have said, we would advocate the improvement rather than the increase of the cavalry.

The numbers will suffice if the quality of the individual trooper does. But, to quote the language of a treatise in the *Militär-Wochenblatt* (No. 10, of 1890):—"How shall we justify the increased requirements and the constantly growing many-sidedness of the cavalry arm with the not specially-selected personnel? Indeed, the service of a modern cavalryman requires physical and mental qualifications and physical and moral training to which only the best of our "nation in arms" are equal. For here the personality weighs heavier than with infantry and artillery. How often in war may the courage, cunning and endurance of a courier decide the fate of thousands? It is not possible to draw a parallel case from the duty of the other arms. The selection will affect the other arms but slightly; from 10 infantrymen (in war from 20) about one cavalryman will be chosen. But these selected troopers—mounted on the best horses Germany affords and armed and equipped in accordance with the latest experience and technical improvement—will make a body which will not only be a match for the cavalry of any enemy, even if superior in numbers, but will also fulfill all the requirements of future warfare, whether as infantry or pioneer, and effectually silence the cry 'mounted infantry.'" In regard to the demand for an increase of the cavalry, we might add, if our army leaders, should, in accordance with the above suggestions, raise our cavalry to the position of an *élite* corps instead of letting it sink to that an auxiliary one, the new army bill should provide proper compensation for the extra time demanded of the selected men.

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To recapitulate. The German cavalry is now the best trained of any. The lance gives it the superiority over equal numbers in the mounted fight, and, thoroughly trained in the dismounted fight, it can hold a superior force at bay in a well-selected country. Provided with means for demolitions and repairs, with boats, bridges and the field telegraph, each regiment is, in a manner, independent, which has never been the case before. Great bodies of cavalry supported by horse artillery will be equal to duties which formerly could only be performed by mixed troops. The spirit of the arm, however—the true cavalry-spirit—will be promoted by these manifold duties; for, under all circumstances, good riding, rapidity joined to the greatest economy of the horse's strength, lie at the foundation of all good results.

We cannot close a review of the German cavalry without noticing the work by Lieutenant-Colonel U. Malachowski entitled "Scharfe Taktik ünd Revuetaktík," which appeared last summer. "It is a duty to recognize unhesitatingly the value of this book and make it known to the army," says a writer in the *Militär-Wochenblatt* (No. 67, 1892). The principal part is devoted to infantry tactics from 1740 until the present time; yet many sidelights are thrown upon the other arms and we consider the remarks upon the use of cavalry the best in all modern tactical literature,—although it does contradict many traditional "principles." The development of cavalry tactics in modern times is clearly shown.

The author severely attacks the rules for divisional cavalry laid down in the "green book" of 1870, which advise the seizure of "the moment" against infantry and artillery. "It can neither be said that these rules were derived from the experiences of 1866 nor that they corresponded with those of 1870." (Page 194.) He further combats the false conclusions drawn from the "Famous day of Unionville" as to the tactical results to be achieved by cavalry. (Pages 214–218.) As to the utility of the attack upon infantry, Malachowski lets figures speak: The loss averaged 60 men and 60 horses for each of the 12 regiments taking part in the great cavalry battle upon the left wing "a figure exceeded by every squadron which attacked infantry on that day. The loss in an attack upon infantry is four or five times as great as in an attack upon cavalry" and "a cavalry division which has attacked fire-arms in a battle is unfit for service for a number of days thereafter." In the face of the "conjectural politics" which infers from Bredow's attack that two more cavalry brigades would have decisively defeated the French army, Malachowski is reminded of the great cavalry attack at Eylau, where—for the same purpose of saving wavering infantry—three great cavalry divisions attacked the same point one after the other. They rode through several lines of Russians, killing very few, and the only result was the gaining of time which was just what Bredow's brigade accomplished.

Farther on, the failure of the strategical as well as the tactical reconnaissance (the latter by the IX. Corps towards Caulse Ferme) on the 17th and 18th of August is asserted, and every cavalryman is shown, by the very important and highly interesting detailed study of the days from August 23 to September 1, where "the principles for the employment and operations of cavalry in advance of the army were won." (Page 241.) In conclusion the

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duties of modern cavalry are recapitulated and the statement is made, "that it must see to it that the fire-arm is devoted to its function without interference; a cavalry that does not know how to secure itself, or the infantry to which it is attached, against surprise does not deserve to sit a horse; it is just as shameful for it as for infantry when batteries are captured near it." The author further maintains that although one adjutant to an infantry brigade is sufficient for ordinary business purposes, he is not equal to the staff service of battle. "From a half to a full Zug of cavalry, composed of selected men, to act as reconnoitrers, orderlies and couriers under an intelligent and able officer, can thus accomplish more for the good of the brigade than by waiting with the divisional cavalry for the favorable moment. The complement of men and horses in a cavalry regiment must be kept full." In our opinion it would be useful, even in peace, to have such detachments assigned to the infantry in rotation during every summer so that the cavalry would be thoroughly grounded in the fighting formations and requirements of infantry for which the manœuvres do not now suffice. It is already being considered whether it would not be better in case of mobilization to have this sort of reconnoitring detachment permanently attached to the infantry.

Malachowski maintains (page 322) that the assignment of a regiment to each infantry division is extravagant (the average loss of these regiments in 1870–71 was only two officers, thirty-five men and forty horses) and that the union of both regiments into a corps cavalry brigade is more business-like. But we believe the fiasco resulting from this formation in the German cavalry cannot be ascribed to the principle but to faulty application; other commanders strove more for individual laurels than the divisional cavalry commanders. The corps cavalry brigade is also more appropriate to war than to peace manœuvres; in peace, corps at the most oppose one another and the divisions always march separately upon different roads; in war, a corps will usually march upon one road and the union of the divisional cavalry regiments at the front will be the normal rule. Malachowski states that the advantage of this union is that the brigade is more easily detached and an interchange with the hitherto protected or too strongly attacked brigades of divisional cavalry is favored. He claims that a squadron of 8 officers and 200 horse is sufficient for the security and information service of an infantry division, and with the aid of the 5th squadron, this could be arranged without difficulty at mobilization. Where the circumstances render it advisable the commanding general may send the regiments to the divisions, but they are not connected with them by orderlies or other interior service.

B. France.—The deputy and reserve officer of cavalry, Joseph Reinach, who took part in the grand manœuvres of 1891 as orderly officer on Galliffet's staff, in his impressions of the manœuvres, just published, makes severe strictures upon the French cavalry, its leadership in particular. Naturally he has aroused the greatest antagonism among those criticised. In a "Réponse à Joseph Reinach,"—coming from the Saussier-Miribel school,—the poor condition of the cavalry is ascribed to the former influence of Galliffet. It is undeniable that the Galliffet school carried the mass system too far, introduced an exaggerated technical formality, produced no

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trained leaders, and was hard upon horseflesh. A faulty understanding, yes, even stupidity, in the cavalry commanders, a slow and hesitating leadership of the advanced guard, a premature throwing out of the main body, hard riding regardless of gait, and long halts merely to cover artillery—which often opened fire at 4000 metres—were observed. The supporting Jäger battalions greatly hindered the free movement of the cavalry divisions. The attacks, although quite energetic, were often objectless; it was not seldom that entire brigades made "a stroke in the air." The reconnoitring service was even more sweepingly and severely blamed than the battle tactics. In the manœuvres of 1891 the distance between parties was always very small, the higher commanders having no need of reconnaissance "as they operated according to programme." A still more dangerous state of affairs has come to light: In March, 1892, the *Revue de Cavalerie* published an article addressed "to the Minister of War, the responsible head of the army," in which he was adjured to give back order and discipline to the cavalry instead of the anarchy which now holds sway. There are as many systems as independent commanders, one special order is quickly replaced by another. From this arises personal animosities, often to the extent of scandal; "everything combines to strike us with blindness and impotence." The author sees but one way of escape, *i. e.*, to give the cavalry a dictator, aud closes with the words: "Vous êtes le chef suprême et responsable, faites votre devoir!"

The article attracted much attention. There was a flood of press comments, a whole cavalry literature grew out of it. It also had a practical result. A circular from the Minister of War, dated April 25, 1892, referred to the evils denounced, cautioned officers of all grades to obey the regulations and made the control and general superintendence of corps commanders an imperative duty.

Soon after the above decree, on May 16, the members of the Superior Council were entrusted with extraordinary power as inspectors that they might inform themselves of the training, fitness for field-service and strength (état des cadres) of the cavalry, "pour assurer l'unité de doctrine en fait de tactique et de formation de combat."

For the rest, the literary war between the partisans of the "tactique de masses" and those of the "tactique de dissémination" still goes on. The last school has prevailed in the permanent peace organization of corps cavavalry brigades and cavalry divisions. The *Revue de Cavalerie*, which favors the "tactique de masses," sees a great mistake in this discrimination and demands a uniform arming, equipping and training and, also, the formation of complete regiments within the cavalry division. By this organization what has hitherto been the duty of the corps cavalry brigade,—security, information and orderly service,—will be industriously practiced. (How this is to be done does not seem clear to us.)

Nevertheless, from this wordy war, and the fundamentally different organization of the French cavalry as compared with ours, it is evident that they are convinced of the necessity of employing masses in strategical reconnoitring; this is shown by the number and the methods of the cavalry division manœuvres ordered in 1892 in which corps cavalry brigades were

employed far more extensively than heretofore. These manœuvres were held in three groups.

By these combined manœuvres it was sought to discover how to execute them in time of war. The regiments consisted of four squadrons and were accompanied by their field-train including provision wagons. In spite of this only the smaller part (that of Lannemezan) seems to have operated consistently with war, the rest seem to have followed a new plan each day. We hear nothing of warlike security service during the night. "The difficulty of making a cavalry manœuvre a true picture of war, even after the general collision, does not seem to have been surmounted even here."

The above criticisms were taken from *France Militaire, Progrès Militaire* and mostly from the *Revue de Cavalerie*. The last criticism in the October number, gives further comments upon the cavalry manœuvres above described. These deserve attention all the more for the reason that, according to its own statement, the *Revue* repeats the opinions of the generals taking part. We have here arranged them in the form of short comments:

Reconnoitring by officers' patrols; definite object necessary; not an empty scouting expedition; information must be sent in under all circumstances. For "service de découverte" two squadrons are usually employed; these furnish the patrolling platoons and the remainder follows in close order under the commander of the two squadroons (*Progrès Militaire*, on the other hand, lays down that the squadrons should be separated). Upon the first news of the enemy, the division commander will march straight upon him, making use of all favorable ground; there will be no eccentric movements; no delay. The best reconnaissance is that made by the commander himself riding swiftly from point to point, the command of the troops may devolve upon the staff occasionally (meaning, doubtless, the next in rank). When near the enemy the brigade commander receives his objective and his direction. "Eclaireurs du terrain" must be sent forward at the right time and must be few and well chosen rather than many. Impetuosity and determination are important in the attack; the troops must be held well in hand as long as possible so that they can manœuvre up to the last moment. There must be no premature advance.

Dismounted fire action was seldom used and then with little cleverness. The artillery should move up rapidly but not inconsiderately. The artillery should see its function in distant reconnaissance rather than in direct defense. The attack upon artillery is to be undertaken without regard to the capture of the pieces; it suffices to silence its fire (we might say, to make it incapable of movement). The advanced guard will always seek to attack the artillery the instant the main body moves to the attack. Infantry should not obstruct the movements of cavalry, turning the latter into "troupe de position." At the manœuvres, commands must not be given too loud. (?) Distances and intervals cannot be kept but they must be lessened rather than increased. It is very instructive practice to allow antagonists to ride through one another and then signal the assembly. Keep within the gait; better gallop than trot too hard.

We here give the most important of General Loizillon's "observations"

upon the cavalry manœuvres of 1891, which were omitted in last year's review; they seem worthy of notice from a tactical standpoint and are thoroughly in accord with our later ideas. The advanced guard regiment of the cavalry division is not there for distant reconnaissance but to secure the main body against surprise and discover the intentions of the enemy. It must advance by spurts like a well-led cavalry patrol, *i. e.*, quite the opposite of an infantry advanced guard. Detachments of the enemy must not always call forth the same measures; above all else, the enemy's main body must be encountered.

In the vicinity of the enemy the cavalry leader must free himself from his troops and, from a favorable and secure point, direct the battle and throw in the reserves. The personal leadership of the troops is meanwhile undertaken by the "Guide," *i. e.*, the second in command or the commander of the directing brigade.

The second line must not have its hands tied during the action; the third line must be kept out of the zone of fire from the first. Against artillery, rapid movement is the best cover. Officers' patrols must be instructed by the division commander himself.

In the autumn of 1892, much was said concerning the establishing of "Régiments mixtes" for cavalry. It was the first experiment and—as reserve regiments were introduced by the law of July 19, 1892,—it was also the last. Passing over this scheme of organization, we will mention the experience with the French remount system which these experiments brought to light, and which is calculated to influence their cavalry tactics. In the case of nearly all the "Régiments mixtes" the men were mounted on used-up draft horses; still, in the 39th and 40th divisions, requisitioned or rented horses were drawn to a limited extent. This experiment has met with utter failure and the conclusion is that such a system is not practicable in France—of 50 requisitioned horses on the list only 30 appeared and of these only 5 or 6 were serviceable as cavalry horses! They are convinced, it is said, that the yearly muster of horses "is not taken seriously enough." The remounting of officers and men has been accomplished through favorable circumstances; those of the non-commissioned officers have been less satisfactory. Lastly, it may be said, the better non-commissioned officers of the furlough class are usually made reserve officers.

Army headquarters does not seem to have lost sight of these unfortunate experiences; the sending of General Bonie, who commanded the 1st Cavalry division at the close of 1892, to Austria-Hungary, seems to have had some connection therewith. He was directed to study the custom which there obtains of giving the mobilization horses of the Landwehr cavalry regiments over to private uses during peace.

The use of bicycles in the army, especially with the cavalry, has been regulated by an order of April 2, 1892. Four wheelmen are allowed to each division staff, two to a brigade and two to a regiment. They will be taken from the reserve and territorial army. They are uniformed and have been tested in the cavalry manœuvres.

As usual the French cavalry devotes considerable attention to the passage of streams. A very successful bridge is announced which the Sappers of the

21st Chasseurs threw over the Vienne at Limoges under war conditions. *France Militaire* (2404 and 2465 of 1892) gives intelligence of successful results attained with a "Tellier passage boat system," improved by Captain Wachi, which seems to resemble the Berthon folding boat. There is also a rumor that France has received 667 Berthon boats for the use of the marines and cavalry. Yet the mechanism for the bridge structure on these boats is not at hand. Perhaps the "system Tellier" is only a changed Berthon boat.

Among noteworthy literary productions the following may be mentioned:

1. Musany. "L'equitation en France," a history of cavalry art in France and an attack upon the present "laisser aller" of the horse in the riding school at Saumur.

2. "Du rôle stratégique et tactique de la Cavalerie." Captain Aubier. The author proposes the division into light and heavy cavalry, armament of "battle cavalry" with the lance, training of special reconnoitring detachments in the cavalry division, training of all regiments in the employment of masses; simplification of the drill regulations.

3. "Notre cavalerie ce quelle est et ce quelle devrait être." Lt.-Col. (ret.) Happsick. Condemns everything intended for the improvement of the cavalry that has been done during this century, except the introduction of the new carbine, and, "of what good is it, if they don't know how to use it?"

4. *Revue de Cavalerie.* Besides what has been mentioned above.—General Thomas, Biographies of the cavalry leaders Bessières, Sebastiani, d'Hautpoul, Caulaincourt, Latour-Maubourg. "Lettres d'un cavalier," from April to December, 8 articles, favors mass tactics and unity of the cavalry; breathes the cavalry spirit and gives a good insight into the present condition of the French cavalry. Regimental Histories—précis historiques de la cavalerie française (begun in 1887)—in 1892 the dragoon regiments 18 to 30 were treated. In the February number,—"Le passage des cours d'eau par la cavalerie."

C. Russia.—Even before the last war with Turkey one saw in Russia great strategical reconnoitring manœuvres, the warlike character of which was due to the great power vested in the commander of the military district, who set aside all peace considerations. A characteristic instance is recalled in the case of a cavalry manœuvre in Poland in 1875, when one party carried off a civil telegraph official as a prisoner because they feared he would betray their movements. After the war—in which, as is known, the reconnoitring nearly always failed—similar manœuvres were held, the greatest being in the military district of Odessa in 1887, in which the parties were separated by 140 km., and the most extensive strategical operations were executed. Meanwhile tactical exercises fell into the background. The managers ordered the umpires not to allow more than the attacks of the advanced guards when the great cavalry masses came into collision. It was further ordered, that during the first half of the manœuvres measures should be taken to secure the strategical part to the army corps following in rear, and to reconnoitre by small detachments: "As soon as this is done the attack upon the enemy's flank and rear must be made in order to learn the method of destroying the enemy's supplies."

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This is the last manœuvre of the sort of which we have information. A revolution followed. At the great Wolhynish manœuves of 1890 there were nearly 191 battalions, 468 guns and 143 squadrons on the scene. The parties, separated by about 30 km., fought according to a plan previously determined upon and followed a distinct programme each day. "The cavalry had no strategical operations to execute; it confined itself to its tactical rôle in battle. In each engagement the cavalry was mounted exclusively; upon neither side was the dismounted action once employed. In the last two days of the manœuvres, the cavalry of both parties attacked in closed masses upon the extensive plains of Luzk and Kowno. * * * There were many attacks, infantry was often attacked and batteries were taken, the cavalry often penetrating into intrenchments." (*Russ, Invalid.*) This manœuvre is compared with that in South Russia in 1887.

Again there is a third school (Souchotin) to be mentioned, which teaches the cavalryman to seek his welfare above all else in the fire-arm, even to executing the offensive on foot with the bayonet and to shooting while mounted. By this school the strategical employment of cavalry in great or small bodies is crowded back; the tactical employment of masses in battle will be attempted before all else. It seems settled that the greater effectiveness of fire-arms is to be neutralized by the increase of cavalry. Souchotin prophesies 300,000 cavalry to 1,200,000 infantry in time of war. From the year 1891 it is inferred that, since the death of the Grand Duke Nicholas, the inspector-general, the cavalry has been placed under the Minister of War. The latter has issued an order placing carbine practice in the background, and giving mounted service and field duty the first place. In practical leadership, concerning which the division commanders must inspect every year, musketry instruction is not mentioned.

Upon the training of the Russian cavalry in 1892, we have the following items of intelligence. An appendix to Prikas 255-92 gives a new regulation upon "the bringing of cavalry into the place of bivouac," with certain detailed directions corresponding to the matter drawn out of a German noncommissioned officer in the "instruction hour." The arming of the German cavalry with the lance has had its effect; one proposition is to put streamers on the Cossack lances so that the horses will become accustomed to them in the attack. A treatise by W. Sbornik advocates the retention of the "lava" and draws examples from 1812, "where the French showed themselves defenseless against this form of attack." The *Rasviedtchik* favors the further exercise in the "Jigitofka"*; on the 18th of October such an exercise was given before Gurko in Warsaw in which the guard cavalry took part. Grand Duke Vladimir emphasized at the beginning of the camp exercises: "more determination in changing formation, * * * quick deployment from column of march for battle, without passing into regimental column." Souchotin's mounted mass fire in which he discovers "a new and mighty weapon for the cavalry of the future" is almost entirely abandoned; in special cases, in small bodies, where it is desired to avoid the loss of time in dismounting, mounted musketry is held practicable by many. General Gurko, on the other hand, in an order of the

*Cossack vaulting.

day, forbids in the strongest terms "any mounted firing." There is a reaction from the musketry furore to the other extreme.

The Russian cavalry is taught (Dragomiroff) that it can ride down anything. Night attacks by cavalry mounted against cavalry under cover are frequent, and are not resisted with carbines, but by a mounted attack. Even cavalry attacks upon infantry bivouacs have been declared successful. Perhaps, however, this information only refers to "camp exercises," where the cavalry knew every foot of the ground. The results of the night exercises, so much loved in Russia, seem mostly to be based upon "camp experiences."

A treatise in the *Rasviedtchik*, "Is the regulation allowance of forage sufficient?" arrives at an unfavorable judgment as to the condition of the bulk of the Russian cavalry, complaining of the imperfect training, of too much indulgence in winter and over-exertion in spring. This general condition will not be changed by the special performances which each year, as in 1891–92, take the shape of violent individual rides, which are announced in the press. The most important of summer "endurance rides" occurred on the following dates, and may have interest as compared with the German-Austrian race, and the French performances: 9th Dragoons (Wilkomir) 320 km. in four days; 3d Cossack reserve officers, 626 versts in 82 hours, including the fording and swimming of the water-courses between Batalhashinsk and Jekaterinodar and back (with only one day's rest); the Crim-Tartar half-regiment, 30th of July until Aug. 7, without rest, 635 versts; after 10 versts they usually dismounted and led. The horses stood the carbine reports especially well, none of all the horses went lame, and only one had mud fever from marching in the damp sea sand. For this a new remedy, *Pyoktannin*, was applied. The pacers put 70 to 90 versts behind them in a march without exhaustion, and held out better than the trotters, which were much emaciated. Upon the whole, these rides demonstrated the superiority of the half-blood, trained in the stud, to the Steppe horse of the Don breed.

The work of the cavalry in reconnaissance, of which Gurko in former years said, "he was troubled by its imperfections," has experienced a revival through the "Instructions for the Training of Patrol Leaders," of August 20, 1891. It contains strict regulations upon "force scouting and endurance rides by day and by night," this being required at least ten times—two in winter, covering 80 km. in two days, or 210 km. in four. If this is not possible, there will be at least 15 short scouts—and it gives a regular programme—"for the preparation of flying patrols intended for the destruction of railroads." In the autumn of 1892, the examination of patrol leaders was laid down for the first time. One will not err in assuming the main contents of the paper to be limited in its scope. It is also mentioned here that last fall, for the first time in Russian manœuvres, and then only in the camp of Krasnoje Selo, blank cartridges of smokeless powder were fired.

One more invention for crossing streams must receive attention,—the water-tight linen sacks, "which are lashed to the swimming horse by pack-thread, and the entire equipment of man and horse is easily sup-

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ported." One pack horse can carry from 80 to 100 of such sacks when they are empty. In general, the crossing of water by the Russian cavalry gives the impression of disjointed individual efforts, especially in the case of the Cossacks, and not of a uniform training of all regiments. A German criticism of the Russian method of crossing rivers is as follows: "If one would reckon with certainty upon the passage of rivers, he must have a suitable material like our folding-boats. Oxhides, inflated drawer-legs, rafts of lances, spades and kitchen utensils, are mere child's play, and will fail in war."

A rumor, from a reliable source, states that Russian officers have visited the Berthon factory in England, and examined the folding boat.

On August 8, the 1st Cavalry Division of the Guard attacked 48 guns, which were covered by a whole regiment of infantry. The result must have shown that such attacks may still succeed, for not over 500 riders were put "out of action" by the rapid fire of the artillery. Nothing is said of the work of the covering detachment. At the close, an attack was made upon a battery covered by a wide entanglement which was indicated by a rope hurdlework. The result showed (?) the possibility of reaching the battery, for while the foremost squadrons were stumbling the rear ones removed the obstacle. Similar "proofs" are announced from the camp exercises at Vladikafkas. One may add: The firing could not have been very heavy.

On the 4th of October 45 squadrons and 8 horse batteries were formed into a corps of cavalry at Skiernewicy and, in Gurko's presence, were employed against an indicated enemy (infantry and cavalry). In his critique, Gurko emphasized the difficulty of a cavalry attack against the front of infantry armed with modern weapons; it must always be directed against the flank; the front must be given over to the artillery.

On October 6th there was a manœuvre between the 29 squadrons and 12 guns assembled at Warsaw, and the 41 squadrons and 24 guns at Rembertowo, 8 km. distant. This also followed tactical lines entirely, the short distance making it scarcely possible to do otherwise.

The same plan of reckless charging against rifle fire was followed in the manœuvres of mixed troops. Umpires and decisions fostered this sort of offensive spirit in every way, and gave victory where, according to our conceptions, there would have been surrender if not annihilation.

Much of the literature of 1892 is occupied with the controversy above referred to as to the advisability of mounted fire, which serves to show the mental horizon of the Russian cavalryman. One of the most violent attacks against it is found in "A word upon our Cavalry" (Petersburg, Beresowski) by Ostap Bondarenko, who not only opposes Souchotin, but all the younger cavalrymen who have gone behind the "green table" from the General Staff Academy,—"the heroes of the pen who burn incense to themselves." Another opponent, Soukhomlikoff, handles the question humorously in a paper entitled, "In Dream and in Reality." The first sketch, "In Dream," gives the learned nonsense of a division general-staff officer upon the "four-footed infantry" in reviewing the exercises of dragoon regiment X. In the second, "In Reality," an example is taken from the last war

with Turkey, where Tcherkesses, who fired mounted, was cut to pieces by the Russian Hussars.

In conclusion, those who desire a nearer acquaintance with Russian training, especially that of the cavalry, are referred to "The Battle Regulation of the Russian Army." (Eisenschmidt, Berlin, 1892.) This book gives, in a well digested form, a general view of the powerful apparatus of printed regulations for forming the elementary strength and unwieldy masses of the Russian military power into a manageable instrument of modern tactics;—whether with success or not, opinions differ. We have seen in the cavalry a rapid transition from one system to another which finds its parallel in no other state. Perhaps the reason for this lies in the little knowledge and interest which those in high places bring to bear upon army affairs and to the growth, favored thereby, of a disposition to indulge in personal whims on the part of the absolute chiefs of military districts in spite of the numerous and stringent regulations.

D. Italy.—It is highly interesting, as opposed to the massing, not only of bodies of troops but also of regulations with which the Sclavic Colossus is busied, to view the way the little army of Italy seeks to reach the goal there recognized.

The judgment of the Yearly Review of 1891, that "even the Italian cavalry,—although in a modest way—labored industriously upon its tactical training," may be repeated for 1892. True, as before, the ability to do so lags behind the desire, and the practical remains far behind the theoretical. The cavalry lacks many conditions necessary for success. Geographical position, topography, race prejudices, (unavoidable garrison changes) lack of horse breeding, and, last not least, the lack of "traditions," form altogether a mountain of difficulties such as is to be found in the case of no other great power. Nevertheless, in a general view of the condition of cavalry tactics, there is much instruction afforded in the "Service Regulations of the Italian Cavalry. They are, in our opinion, little masterpieces in matter and form, showing understanding and giving a clear view of the present cavalry situation in Europe.

In this connection may be mentioned the publication of a new *Regolamento per la Cavalleria* of January 1, 1891. This gives in three small handbooks in a complete but abridged form, what are known with us as: Drill Regulations, Riding Instructions I. and II., (including a school of the driver) "Turning and Vaulting of Mounted Troops," (the latter is finished in 13 pages under the heading "Esercizi Ginnastichi!") Manual of Arms, Directions for Repairs and Demolitions. The following may be taken as characteristic forms of drill,—breaking from the middle of platoons or squadrons into column of fours, a corresponding movement from the flanks, the omission of the command of the chief of platoon with rare exceptions, and the half-column for all bodies larger than a squadron (as in France). The chapter, on "Training of the Squadron in the Use of Ground" contains some very practical directions for the training of the troops to the end sought by the Field Service Regulations. Some very excellent regulations are devoted to carbine practice. * * *

In the Italian Field Service Regulations, Part II. corresponds somewhat

to the German "War—Etappen—Service." The second part of ours corresponds to the "Istruzione per le esercitazioni di combattimento," published July 31, 1892, in a volume of regulations for inspections and parades. The first gives some very good directions for Kriegspiel—(Manovre sulla carta). These new regulations give the non-commissioned officers, down to the corporal, great independence. Under "strategical reconnoitring," the experiences of the Franco-German War are compressed into 13 short maxims, a thing that has been accomplished in no other regulations.

Driving the enemy's cavalry from the field is emphasized as the first requirement of the cavalry,—in view of the *Ordres de bataille* of the great powers which throw 24 squadrons in advance of nearly every corps,—and thereafter the cavalry is to be held well in hand where a collision with the enemy is possible on the same day. To attain this object freedom of movement is necessary; the fulfillment of the problem is not consistent with the security of the troops following in rear. The phrase "see and screen" is to be rejected, the throwing out of such a veil leads to a frittering away of strength; and, however thick the screen, the enemy will break through it with ease if upon his side he remains in close order. Forms for the advance cannot be laid down in advance, they will be indicated by the enemy and the country. In general it is recommended that few and good officers' patrols be sent far in advance from the reserve squadrons—2 to 3 at the highest—these will be of especial service in overcoming obstacles and for communication. But within the scope of their employment they must be quite independent and not be burdened with the security of the division. The main body of the division must be held upon one road except where favoring parallel roads or exceptional features of the country render a departure from this rule desirable. The remainder of the regiment from which the reserve squadron was taken will usually suffice for an advanced guard. The horse batteries are best united with the main column. In a close country it is recommended that the trains be parked in a sort of wagon fort, which, usually will be defended easily by a few carbines from an attack of the enemy's cavalry. Supporting infantry will be of use in seizing points of support in rear, but it must never seek to influence the cavalry movements. For the fighting formation of cavalry no normal intervals and distances are laid down. The order of operations of the division commander shall tie the hands of no subordinate; patrols must report even if they have seen nothing of the enemy, the regiments will always, if possible, spend the night under cover, etc. This contains scarcely a word that does not correspond to our ideas.

Also in the last year Italy did not rest content with theory. While the special cavalry manœuvres of 1891 were little more than drill evolutions, those of 1892 made a beginning in strategical reconnoitring as contemplated by the new field service regulations.

(a) Taking advantage of a change of station, three regiments marching south operated against three moving north. When about 130 km. apart—the first were near Cività Castellano (50 km. north of Rome)—the latter near Frosinone (80 km. southwest of Rome)—they were put in reconnoitring order. Both sent out officers' patrols which the first day put 90 km.

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and the second over 50 km. behind them; the reserve squadron was a day's march in advance of the main body. On the fourth day the tactical decision was reached in the Campagna east of Rome, in which both parties took part with full numbers. The troops were supplied as in war. The detached portions received money for purchases in open market, the patrols were given blank requisitions to be served on the people. The reserve squadrons carried provisions and cooking utensils on a pack horse. A new pack saddle was tried which enabled one horse to carry one day's rations for the entire squadron—8 camp kettles with raw meat, rice, etc.; total weight, 55 kg., without regard to the roads—a measure which seems worthy of imitation in mountainous countries. According to orders the sentry work was dismounted; towns and villages were preferred for bivouacs.

For 1893 the Minister of War has allotted about 1500 lire to the army races of the racing associations of Naples, Rome, Florence, Milan and Turin which have been recognized by the Italian Jockey Club. All officers may enter who have horses that have been at least four months in their possession. Near the race course of Rome a new Military Riding School has been built (*Tor de Quinto*) whose work is quite celebrated.

E. Great Britain.—Last year seven cavalry regiments took part in the manœuvres at Aldershot, one of these remained with the other arms and six operated from July 20 to August 10, as special cavalry divisions and from August 10, to 20, took part in the general manœuvres. The critique condemns the work as too much according to rule. With regard to the horses the requirements were undoubtedly high. The press condemns the lack of system in the dispositions, the bad reconnoitring and the total disregard of artillery fire. A professional opinion is not at hand.

This is the first time in England that an experiment has been made in the employment of cavalry in great masses, and may be associated with an important change in organization—the authorization of the cavalry division.

We have still to notice the "mounted infantry" peculiar to England. The regiment is composed of selected men, each infantry company of the standing army furnishing its four best marksmen. Officers are chosen for horsemanship and the ability to instruct therein. The horses are partly Irish "cobs," partly South American mustangs, and partly cavalry troop horses. On the average six companies practice for six weeks yearly. The troops look upon the horses as a means of transport only and a fight mounted is precluded by the arm, the only *arme blanche* being a bayonet triangular in section, worn at the side, and intended to be fitted on the rifle.

F. Austria-Hungary.—The yearly review of the tactics of the cavalry of our nearest ally, had nothing in 1890, and, excepting literary notices and fall manœuvres according to the regulations (6 lines), nothing to announce in 1891. That of 1892 has only the following facts to impart: The armament with the very good Mannlicher carbine M. '90 is completed; a new remount depot is established; a new feed bag is introduced, which enables the feed to be taken out quicker, for the cloak does not have to be removed first, as was formerly the case; according to the *Reichswehr* the red trou-

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sers of the cavalry will be changed for grey and the Uhlans will receive a dark grey coat with red facings.

What explanation is there for this dearth of news?

"For a number of years we have observed a standstill in the tactical employment of our cavalry, as well in the cavalry evolutions of the interior as in the corps manœuvres. * * * Tactical and strategical reconnoitring is neglected for the detailed training in horsemanship." "Aphorisms upon the Imperial and Royal Cavalry," by an old cuirassier, Vienna. Seidel & Son, 1892.

These two assertions answer the above question and pass judgment upon the present system of technique weighing down the Austrian cavalry so often referred to as a model. From it we conclude that it is the same system we described at the outset as occasionally striving for the mastery with us but which is yielding first place to the conception of the true requirements of modern war. Even in Austria men with this idea have not been lacking. In 1885, Count Pejacsewich, then inspector-general of cavalry, called by a Prussian review of the time "the most prominent personage in the circle of Emperor Francis Joseph," wrote his "Rules for Cavalry Manœuvres," a true model in every way for modern cavalry regulations. It closes with the words: "I will see whether the idea prevails in the cavalry that the attack upon the enemy's cavalry (while pursuing its strategical functions) is to be regarded as a means to an end but not as the end itself; and, further, whether the effort for secrecy, and the conception that the power of a strong body extends over a certain space beyond the front and flanks, animates the cavalry." Between the opposing parties there was to be a space of 120 km., and the conditions were made to resemble war as closely as possible. The manœuvres were never executed and soon afterwards Count Pejacsewich died.

In the great manœuvres of the year 1889, the two cavalry divisions were only 60 km. apart. The manœuvres began with fixed marches and outpost duty; the latter performed each evening by the two infantry battalions attached to each division. The influence of His Royal Highness the Grand Duke Albrecht has already made itself felt. In a paper, "On the combined action of the three arms within the cavalry division," he proposes to add two battalions of light infantry to the normal organization of the modern cavalry division. Besides the infantry named, it will be followed by:—

a. A baggage train of 36 two-horse wagons which in bad weather may be increased by 26 additional wagons. *b*. Further trains numbering 105 "Aerar" and 92 civil wagons. *c*. 1 cavalry division munition column of 15 four-horse wagons and two reserve guns with 9 wagons. From this it is not difficult to demonstrate the degree of mobility of an Austrian cavalry division.

It seems that there is little inclination for the lance in Austria, and nothing is heard concerning its introduction. The system of letting out trained troop horses for the private use of civilians has been further tested by the cavalry of the line with good results. If, after the above, a general opinion of the Austrian cavalry cannot be favorable, still it must not be overlooked that, with its splendid material in men and horses, its model

individual training and the well-known horsemanship of the Austrian officers, it only needs a slight impetus to attain a high degree of excellence. "There is only lacking," says one authority, "in its leadership, an Austrian Rosenberg with the fiery spirit of a Blücher, who will teach and inspire by the force of his own example and destroy the deep-rooted prejudices and the fallacies of peace, substituting a warlike efficiency for the pampered horses with beautiful exteriors and faultless gaits." Soon may he appear at the head of the squadrons so closely allied to us.

G. Switzerland.—In the first part of the Yearly Review the noteworthy events concerning the organization, instruction and armament of the cavalry of the less important armies are already given. With but one exception, no technical observations were made that were instructive or required special report. Switzerland, of the smaller states, seems the least favorable ground for the production of original thoughts upon cavalry progress. Nevertheless, our attention is here arrested by the signal efforts of one man to develop the general military strength of his country and improve its cavalry in particular. The "Directions for the Field Manœuvres of the 3d, 4th and 8th Dragoons," by Colonel Wille, Chief Instructor of Cavalry (*Sweizerische Monatschrift für Offiziere aller Waffen;* dritter Jahrgang) in our opinion occupies a high place in military literature to which few cavalry publications have attained, and it is recommended for the study of every cavalryman. We can only give a summary: After stating the functions of "independent cavalry at the front" it is shown why this peculiar strategical service is not practicable when too close to the enemy. "The object of the above manœuvre is the practice of the correct employment of the fighting strength for the solution of the strategical problem. For this the following principles are regarded as of general value and will be followed."

1. Divide the troops in exceptional cases only. "The commander must be governed by the view that it is only necessary to strike the enemy in one place, and that the most important, so that he will be totally defeated." Dispositions must not be made prematurely; secret and difficult ways are not to be followed, but the most natural and direct route will be taken to the objective—the enemy's main body. Then, for the first time, will subordinates be let out of hand to work out problems of short duration. The division of forces, referred to above as exceptional, may be more often necessary upon Swiss soil than in other countries (for instance, in the passage of mountains by several roads).

2. In sending out and instructing patrols, their inquiries must be limited to main questions, and not be extended to every collateral subject of possible interest. (A principle to be taken to heart.)

3. The cavalry may seek the solution of the problem entrusted to it by *l'arme blanche*, dismounted fire, or the two combined. Fire-action can only be employed where it is justified by the configuration and cover of the country, and where a fire of relatively small weight will achieve important results. As a rule, the great numerical superiority of our enemy, the topography of our country, to which habit has adapted our people, will almost arbitrarily force our cavalry to rely upon fire action principally.

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Still, in a country which does not favor the fire-arm or increase its importance, our cavalry must not use its fire, but, even in the case of a stronger enemy, must attack with *l'arme blanche*. (To this we might add: In cases of superiority, where defeat seems imminent, it should seek to lure the enemy into ground favorable for fire action.)

Then follow directions concerning the interesting experiments with machine guns (each regiment had a battery of from 3 to 4 mitrailleurs) which were used during this manœuvre for the purpose of increasing the strength of the fire during the dismounted fight. "A cavalry regiment must never sink to the rôle of a covering detachment. * * * An attempt to accompany the attack can only be useful in rare cases."

As to the mounted attack it lays down: "To surprise the enemy in unfavorable ground while unprepared, or in the act of preparation, is the first guaranty of victory. The formation and constitution, the direction of the attack, yes, even the strength, is of little importance, if the fullest advantage is taken of the moment of surprise. The troops are to be led by calls and signs. When the enemy can be surprised, the attack against infantry and artillery will be made in extended order by échelons rapidly following one another, and, when possible, from different directions; the movement beginning at a gallop which increases in speed * * * close order will be used against attacking cavalry; the trot will be used to within 100 paces, when the assault will be made at full speed."

When these lines appear in print, a new German Cavalry Regulations will have seen the light of day. We can only hope that it will depart very little from Colonel Wille's ideas.

We believe we have included in our review the most important ideas contained in the literature of cavalry tactics. For a more thorough notice of German and foreign publications in which they are mentioned collectively, and, in part, briefly noticed, the reader is referred to the Literary Supplement of the *Militär-Wochenblatt*.

CONCRETE AND THE ACTION OF SEA WATER.

From the Royal Engineers' Journal, July 1, 1894.

THE following is an extract from a report dated 22d April, 1892, by Sir A. M. Rendel, Consulting Engineer to the India Office, kindly communicated by Colonel G. E. L. S. Sanford, C. B., C. S. I., R. E.:

As the permanence of cement concrete exposed to the action of sea water, has been lately brought into question on very serious grounds, I think it well to mention here that I have just reported to the Public Works Loan Board upon the failure of an important concrete breakwater at Mevagissey, on the south coast of Cornwall, for which they found the money £20,000). It was built during the years 1889 and 1890, and was destroyed by a heavy gale in the spring of 1891. Mr. Arnold Philip, late the chem-

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ist employed at Cooper's Hill on chemical investigations connected with Indian State Railway materials, who undertook for me the chemical inquiry which the case seemed to me to require, has clearly showed in a report, copy of which I append, that one sufficient cause (there were others) for the failure was the destructive action which the salts contained in sea water had had on the Portland cement which had been used in the construction of the breakwater; and there can be now, I think, no doubt that this action has to be taken into account in all works of the same class. Fortunately the way to avoid it is now clear also. It is to make the concrete so watertight that water cannot easily pass into and out of it. The danger is of course least where the tidal rise and fall is, as at Madras, very small, because in such cases the alternations of water pressure on the concrete, first inwards and then outwards, are too small to overcome the frictional resistance which concrete of fair solidity offers to the passage of water through it. Why the salts do not attack the faces of concrete has not, I think, been yet made quite clear, but we know by experience that they do not do so. Even at Mevagissey I found the faces, which were made of much stronger and closer concrete than the interior, so sound and hard that I did not think it necessary to have them even analyzed. The destructive action was apparently confined to the weaker interior, the sea water finding free access to it under tidal pressure through the bottom of the breakwater, which was founded on gravel or coarse sand, the result being that 30 per cent. of the lime contained in the cement used at the level of low water had disappeared in less than three years. In order to make concrete sufficiently water-tight we must use plenty of sand, and as a consequence plenty of cement. I should put the safe proportions for it at three of small broken stone, two of sand, and one of cement, to which may be added say, not more than half a ton of large stones to every yard of concrete, and even at Madras I think these proportions should be used in any concrete that has yet to be made. A new specification for the cement is also desirable, in which its specific gravity should be substituted for weight per bushel. According to recent experiments the specific gravity should be 3.1, and power to make chemical analysis and reject upon it, if necessary, should also be taken.

Remarks on the results of the Analytical Examination of the two Samples of Damaged Concrete reported on March 30, 1892.

The damage which sea water causes to concrete is due to the interaction which takes place between the silicate of lime of which Portland cement is chiefly composed, and the sulphate and chloride of magnesia contained in the sea water. A double decomposition takes place in which hydrated sulphate of lime is formed, silica is set free, and magnesium hydrate is deposited, whilst probably some chloride and sulphate of lime is dissolved out in the water. The destructive result of this chemical action must be considered under two heads:

First, when it takes place in the interior of a mass of concrete. Owing to the porosity of concrete of the strength commonly employed in modern works, mixtures of one part of cement with from 8 to 10 parts of sand and stones, are frequently used, and rubble is often added; if its face is unpro-

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tected by any denser and more impervious material, and if it is subjected to varying pressures due to tides, wave action, etc., a more or less rapid flow of sea water takes place through its pores.

The origin of the tensile strength of Portland cement after setting is the felting, or matting together of the thousands of crystals which are formed, as the freshly mixed cement combines chemically with the water with which it is gauged; this is what is meant by the setting of the cement.

The chemical action of the sea water destroys this source of strength in two ways. Firstly, by actually dissolving and weakening the individual crystals in this felted mass, and secondly, by the bursting or blowing action caused by the fresh crystallization of one of the products of the chemical action, viz., the sulphate of lime; as this crystallizes out it absorbs water, with which it chemically combines, increases in volume and mechanically breaks up and tears apart the felted crystals of the cement, hence destroying its internal cohesion. It may be readily imagined that damage of this character proceeds with accelerating velocity, for the disintegration caused permits the flowing water to carry off the broken-down and powdered material, thus leaving still larger openings for a fresh influx of water.

To prevent this action of sea water upon the internal portions of concrete masses, the outside surfaces have been faced with a fine dense cement plaster, or concrete, containing a much larger proportion of the Portland cement than the underlying concrete. This device has acted very successfully in protecting the concrete, and this necessitates the consideration of the action of sea water under the second condition, namely, when it can only act on the exterior of the mass.

As the exterior of a mass of concrete is exposed to the direct action of the sea, and as the wash of the waves and the scour of the tide must be always supplying fresh quantities of water, it might be supposed that the exterior of the concrete would be more rapidly acted upon than the interior, where, even if the concrete has very considerable porosity, the flow of the damaging water is comparatively slow. Moreover, as the exterior or protecting surface, as has already been pointed out, contains much more cement than the interior of the mass, one might suppose that, as it is the cement which is acted upon, and not the sand and stone, such protecting faces would be rapidly corroded away and the interior concrete soon become exposed to the sea.

Experiment, however, has constantly shown that this is not the case, and this difference is probably due to the fact that the chemical action takes place only at the surface, and there is, therefore, no bursting action due to crystallization of the decomposition products; hence there is none of that mechanical disintegrating action which takes place when the same chemical decomposition takes place in the interior of the mass, and, moreover, as the products of the decomposition of the cement, due to the first attack of the sea water upon the external face, crystallize out, they form a protecting surface to the cement, rendering it more impervious to the chemical action of the sea water, and also by mechanically choking the pores the soaking in of the decomposing salts is stopped. * * *

(Signed) ARNOLD PHILIP.

Specification for Portland Cement.

The cement is to be of the best quality and of such a density that when a week old the specific gravity shall not be less than 3.1.

The cement must be made entirely from well-burned clinker, ground to such a degree of fineness that the whole will pass through a sieve made of wire .007" diameter, having 2500 meshes per square inch, and that 90 per cent. by weight of the whole will pass through a sieve made of wire .005" diameter, containing 5776 meshes per square inch in each case without rubbing. No powder or imperfectly burned material is to be ground up with the clinker.

Samples of the cement will be taken at the contractor's works as often as may be deemed necessary. From these samples test briquettes will be gauged and moulded and be placed in fresh water 24 hours after gauging and will remain under water till tested. The water used in gauging the cement is not to be less than 20 per cent. (by weight) of the cement.

After six days' immersion the briquette will be subjected in a machine to a tensional strain applied at the rate of 100 lbs. in 25 seconds, of not less than 400 lbs. on a section of one square inch, and after 13 days' immersion to a tensile strain similarly applied of not less than 450 lbs. per square inch. Three briquettes are to be tested for each test and the average of these to be taken as the tensile strain.

The color of the briquettes at their fracture after testing must be dark slate blue throughout.

Pats ⅞ inch thick, gauged as above, are not to show any cracks or alterations of form whether left in the air or under water, and when broken must be uniform in color and hardness throughout the section.

On analysis the cement must be found to contain not more than 61.5 per cent. of lime, 1.25 per cent. magnesia, sulphides and sulphates, equivalent to 1.75 per cent. sulphuric acid and not less than 23 per cent. silica and 12 per cent. alumina and oxide of iron.

Cement which does not stand the above tests will be rejected.

THE ARTILLERY IN 1870-71, FROM A GENERAL ARMY POINT OF VIEW.*

From the United Service Magazine, London.

By Colonel J. F. MAURICE, C. B., R. A.

LORD WOLSELEY AND GENTLEMEN:—I selected my subject for the lecture to-day because, just at the present moment, it happens to be one that has a special interest for myself. The causes that make it interesting to me are such as, I think, may perhaps enable me to make it interesting also to the officers here in Dublin and at the Curragh. I have just come back to the ordinary work of a regimental officer in the artillery, after having been for the last seven years Professor of Military History in the Staff College. As part of my work there, I have

*A Lecture delivered before the Military Society of Ireland; General Right Hon. Viscount Wolseley, K.P., G.C.B., G.C.M.G., Commanding the Forces in Ireland, in the Chair.

been fourteen times with parties of officers over the ground of the battles of the 1870 campaign. It has been our business to study the way in which ground was used by the guns during that campaign. We have had considerable facilities for doing it. We have been examining on the spot the Prussian Official History, and the account, so interesting to all artillery officets, given by Prince Kraft zu Hohenlohe, of that part of the campaign in which he was immediately concerned. We have naturally compared other statements with these. We have had also, through various officers among us who have had friends in the German army, opportunities for getting the private opinions of some of the best German officers on many points connected with that campaign. Of course our study has not been concerned only, or perhaps chiefly, with the use of artillery, but generally with the whole tactics. Still, in the battles of 1870, the share of the artillery was so important that officers of all arms have been largely interested in examining the conditions of its use.

Just lately, having known for some little time that I was about to return to regimental duty, I have naturally been studying carefully the work that has been going on at Aldershot. I have been talking with a number of officers there, of all arms, on the points which have arisen in connection with the tactical field days. Perhaps, from this point of view, I cannot better explain why I choose the special subject which I have taken to-day than by quoting an expression used to me by Sir Evelyn Wood. He said: "I think the infantry officers here are just now more interested in the question whether you gunners are going to get a satisfactory shell than in any question of pure infantry tactics." Furthermore, only the other day he requested the infantry brigadiers at Aldershot to make themselves acquainted with a chapter in a new Artillery Drill Book which has been recently brought out. That book is at present undergoing revision; but it has been compiled with great care. The chapter which Sir Evelyn recommended is devoted to the subject of the employment of artillery in the field.

When then I took as my title, "Artillery from a General Army Point of View," I intended to appeal to those officers who are not artillery officers to interest themselves in the subject which I have to bring before them—just as I find that at Aldershot Sir Evelyn Wood has succeeded in interesting officers of other arms in the work of artillery, and has made them, I think, understand that it is not the bugaboo that it has been apt to be assumed to be in the past, but that it is possible to recognize most of its larger features, most of its important characteristics, and to use it as an ally whose services can be understood, one on which, if that is done, a safer reliance will be placed. Furthermore, I submit that under our present condition of tactics it is scarcely possible for any of us in our several arms to perform our own work efficiently without understanding some little of the work of the other arms.

I shall be able to use a rather forcible illustration from one of the battles of the coöperation that took place between the different arms during the 1870 campaign; to show how they supported each other, and to suggest that something of the same kind will almost certainly happen in the future, when we shall want to understand one another in order to be able to

coöperate and work together. Perhaps the best method that I can adopt for that purpose will be to take in succession some of the battles of the campaign itself, run through rapidly as many points as time permits that are connected with our subject, leaving altogether aside those that are not so interesting, and, coming to the points in the battles that are of most interest, to discuss them, and to lay before you the conclusions that I think may be deduced from them. For it is exceedingly important that, when we are laying down, as we have been laying down lately in our Artillery Drill Book, a certain series of principles in connection with the work of artillery in the field, these principles should be directly and strictly based upon actual war experience. There is, I venture to think, in some quarters a tendency to speak with a certain amount of dogmatism from experiences acquired merely by practice at the butts and from ballistic theory. This is not a tendency at all at Aldershot, where we are all very much of one mind. It comes from quite another quarter. To take an illustration: In a lecture that was delivered at Woolwich a little time ago, by one who spoke as though with authority, it was said that our first consideration in a battle should be how we are "to *distribute* our artillery fire." Now I should say that that is the very last thing you should consider in relation to artillery fire. The first thing and the second, and the third thing on that point is how to concentrate artillery fire. I think I may say that at Aldershot we are unanimous in regarding this notion of "distributing fire" as a rash and dangerous heresy. We are most anxious to combat it. It specially affects the question of the best form in which we can render support to other arms. It is closely associated with the general principles of war, in which concentration and not dispersion is the invariable law of success. That, therefore, will be the most important subject to which I hope to direct your attention this afternoon. It vitally concerns not only the artillery but the army at large.

I am very far from saying that those battles of which I am about to speak to-day are complete and adequate guides to what we shall meet with in the future. I do not think that they are. In the first place, the changes of all kinds, and especially the changes in artillery armament, which have taken place since the 1870 campaign, are at least as great as any that had taken place before that time from—well, of course, it is a little vague to fix a period, but, at least, from the time when rifled artillery first came into vogue. I should myself go further and say from 1815. Certainly, at least as regards the two periods I have taken, from the time rifled artillery first came into vogue up to the 1870 campaign, and from the 1870 campaign to the next war, whenever it takes place, I am inclined to think that the changes of the latter period will turn out to have been greater than those which were introduced by the adoption of rifled guns at all. Therefore, no doubt a considerable modification of tactics will have to be made. Nevertheless, that war is the last that we have in which two highly organized, or what ought at least to have been highly organized armies were engaged in the field against one another. For I do not think that the 1877–78 campaign, though I am going to-morrow to speak on one very striking incident of it, presents anything like the same kind of value for tactical study

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that the 1870 campaign does. Therefore, in view of that necessity for getting the test of war for our principles, it is at least well that we should thoroughly realize what experience we have from the 1870 campaign before we attempt to make such corrections of that experience as changes require.

The actual first battle of the war was at Weissenburg. It was a very small engagement relatively to others. It was a case in which an overwhelming German army threw itself upon a very small French force—an incomplete division. Further, the peculiar conditions connected with it prevented the artillery from being used with much effect. During the 1866 campaign, as all of you are aware, the Prussian infantry had been compelled absolutely to distrust their own artillery, and deservedly to distrust it, because it completely failed. Between 1866 and 1870 the most enormous improvement had taken place in the training of their artillery, and consequently it served them well in 1870. I do not propose to enter into that story. It has been admirably told by Prince Kraft zu Hohenlohe, and I am rather anxious to avoid ground which he has covered. What concerns me now is the fact that, during the first battle at Weissenburg it was natural that the infantry should be under the impression, with regard to artillery, which was produced by the campaign of 1866. Accordingly they did not wait for the support which they should have waited for from their artillery. They rushed in and lost very severely in consequence, on this the first occasion on which they faced breech-loaders. It was here that the infantry learned their lesson. They did not repeat their mistake. The services of the artillery at Weissenburg were therefore insignificant, and except for one rather interesting little incident about which I think it is worth while to say a few words, I should have been rather inclined to leave Weissenburg entirely on one side.

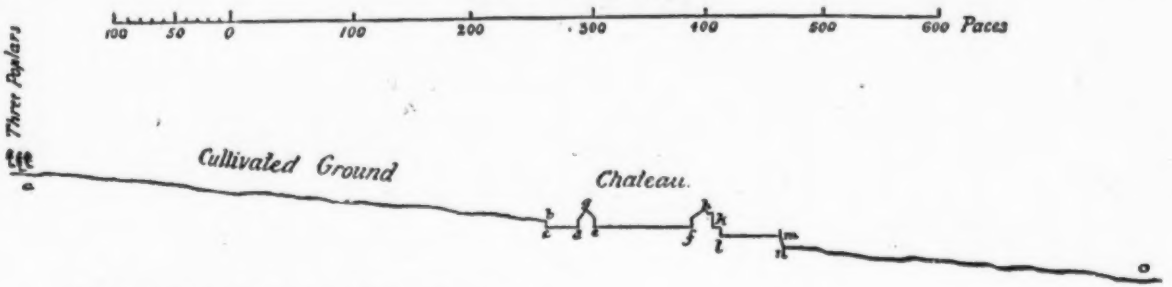
There is an old isolated house at Weissenburg, standing in its own grounds and known as the Chateau Geissberg. It was deserted by some French seigneur at the time of the first French Revolution. Squatters occupied it, and their successors are still in possession. It is a very solid building of rather remarkable construction. (See Section, p. 1091.)

It lies on the side of a hill. If we start down this hill from where the three poplars grow, a due eastward descent over some cultivated ground brings us to the entrance on the northern side of the chateau. Turning in through this entrance we have on our right, in the direction of the poplars, a sharp revetment wall, that comes sheer down from the side of the hill. At the foot of this wall you are on the general level of the chateau itself, from which the wall is separated by the carriage road, on which you have entered in passing through the northern gateway, and stands back as shown in Section. On your left lies the block of buildings which form the chateau. You pass eastward under an archway and find yourself in a square court, round which the buildings stand; the main block being to the eastward. From the top of the hill near the three poplars you can see the roofs of these buildings. Passing eastward through the main block you find a set of steps leading down a considerable depth into a wide garden terrace, still further eastward. At the east end of this terrace there is yet another revet-

SECTION SHOWING GROUND BETWEEN THREE POPLARS AND CHÂTEAU GEISSBERG.

Direction of Section runs nearly West and East.

Scale of paces, $\frac{1}{4200}$.



a b—Distance about 450 paces, ground falling about $\frac{1}{12}$.

b c—Revetment wall about 18 feet high. *c d*—Space between revetment and building. *g d e*—Out-buildings of which roof *g* only is visible from three poplars. { Carriage road runs near building entering square by arch under *g*. }

e f—Interior court, round all four sides of which buildings of Château run.

f h k—Main building of Château, of which part of roof *h* is visible from poplars.

k l—Steps giving descent to garden, about 15 feet of descent.

l m—Garden.

m—Balustrade, running north and south, with two towers at either end.

m n—Revetment wall about 30 feet, covered with trellises.

n o—General fall of country beyond Direct German approach *o n*.

The Section is only sufficiently correct to illustrate Lecture. It is drawn from memory only. Perhaps I have made the buildings too narrow, and *e f* too wide.

ment wall, which is covered over with trellises for creepers, and on the ground below looking still east there are stakes for vines; the whole together making, in the immediate front, a most serious obstacle. The ground then slopes to the east with a very wide field of fire indeed. At the north and south ends of this eastward terrace there are two square towers of very solid masonry. They also give a splendid field for fire over all the country round. In this garden the French infantry for a long time held their own—and they occupied as far as they thought necessary some parts of the houses. Now, according to the Prussian Official History as it stands, it was from where the three poplars are that the artillery brought such an effective fire to bear that they forced the French infantry to give up the place. The Germans attached so much importance to this spot, as one of the souvenirs of the battle, that the original three poplars having been cut down by the inhabitants three fresh ones were afterwards planted by the authorities. The history states that it was not until they placed their artillery there that they were able to turn the French out of the position I have described.

I have never understood how they could have turned infantry out of that place with guns planted at the poplars. Because, as may be seen from the Section, the infantry could get under the shoulder of the revetment walls. The shells of the Germans could only just touch the tops of those walls and the roofs of the houses and no more. You could not in any way shell the nearer walls—and it would be very little use if you did, there would still be a series of interior walls behind which the infantry could retreat. Even if the buildings were shelled, by no means that I can imagine could that fire touch the men beyond them. You could not see them, and you could not see where your shells were going, or whether they were producing any effect. Furthermore, since the most effective position for the French infantry was in the garden terrace, I should like to put it as a problem to any artillery officer if he could by any means, especially without a plan of the house and grounds, drop shells into that terrace, knowing that his own infantry, whom he could not see, might be approaching from the east, their direct line of advance. Therefore I have always absolutely disbelieved this story, despite the authority of the official narrative. In the Section it is the ground behind *b c* and the whole of *l m* that would be most safe.

There has appeared lately in Germany a pamphlet by an artillery officer present at the battle, which explains that it was not from the poplars, but from another point more on the northern side of the chateau, that the decisive fire was directed.

There are a series of undulating spurs which run down from the French position. Up these the German advance was made. On one of these the Geissberg is built. On another to the north of the Geissberg it was possible to get some guns placed, though under a very close infantry fire, and with considerable difficulties in the way, such as vines, hop gardens, and fruit trees. The Prussians may have placed some guns there, but in my opinion it was not any guns that turned the French out of the chateau. The French there were only a small party, which, after the division had been broken up by the attack, had thrown themselves suddenly into the

Geissberg, and the whole sweep of the battle passed them by. My belief is that they surrendered because they had no hope of holding out after the whole of their own force had fallen back and left them. I do not think myself that, in that instance, the artillery had any particular effect on the decision of the action. It is rather a curious case, because, so far as I am able to observe, there are very few other instances throughout the 1870 campaign in which infantry could hold a house exposed to artillery fire. As sure as guns were turned upon such a position, so sure would the infantry go out of it. That is the history not only of this earlier portion of the campaign, but, even more so, of the battles that occurred during the last period of the war. In fact, there was one story told me whilst I was over the ground of the war, immediately after it was over, of a village which was taken and retaken twenty or thirty times in the course of the day, which obviously meant that, as the infantry went into it from one side or the other, the guns of the enemy were turned against them, and the infantry went out of it again.

I have gone into this case at some length because there are several deductions to be drawn from it. First, I think it will show you that there is some advantage in the actual study of the ground on the spot. Admirable as the Official History is, it requires to be read with the light which the ground itself throws upon it. Secondly, we need not believe the Prussian artillery or any of their other arms to have worked miracles. Thirdly, I think it will show infantry officers the importance of understanding just what guns can do and what they cannot. No art that we possess will prevent a projectile from taking a parabolic curve in its flight. We can only determine within limits the nature of the parabola it shall trace. Therefore, there do occasionally occur positions apparently exposed to artillery fire which do in fact enjoy a singular immunity from it. These may sometimes become places of the greatest importance for infantry to hold. I might take as an instance Hougoumont at Waterloo, which, according to my belief, would—in the then condition of the wood in front of it—be under the present conditions of artillery fire as valuable a place for infantry as it then proved, Therefore, for the right choice of such positions some understanding of the nature of artillery is very necessary, I should myself even go further and say that the question of the occupation of houses by infantry is almost purely one of whether guns can get effective fire to bear on them or not. If they can, the position is not worth holding. If they cannot, it may be very strong and important. I have always myself believed that if, for instance, the French had been so reinforced during the battle as to be able to drive back the Germans, this chateau would have proved an invaluable pivot for them. In itself it was exceptionally strong. It fell because of the general circumstances of the fight, not because of any inherent weakness of its own.

If these deductions from the war be sound, it seems to me important that they should be applied to umpire rulings at field days, and for Kriegsspiel. Otherwise infantry officers are likely to have a rude awakening when the next war begins. In any case I think I have shown that the question is one which is of vital importance to infantry officers. If any instances

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can be quoted where ordinary houses were held by infantry under effective artillery fire I should like to know them.

To pass to the battle of Spicheren, from which there are a few points that are worth taking, though not nearly so many as I shall take from the next battle. That battle of Spicheren was, as so many German battles were, a very higgledy-piggledy affair. It was not carried on under the command of any one general. Generals succeeded one another about four or five times in the course of the day. The troops came up in detachments from all directions, and were just thrown into the fight as they arrived. Almost the only thing that did keep the fight together was the massing of the guns, which were gradually brought from the river as they passed it up to the heights opposite the French position. The French were on higher ground than the Prussian guns could take up with good effect after the earliest stage of the battle was over. But the conspicuous feature at Spicheren, a thing that stood out in front towards the Germans as they came up, was a hill, very precipitous, but not nearly so high, I think, as most of those who have not seen it, and who have only heard its name, would expect it to be. This hill is called the Rotherberg. The principal crest runs out a long way in a narrow spur, ending in a single narrow shoulder. From this there is a steep fall to the plain. This spur has a wide command over the ground over which the Germans, who were on the opposite hills on the other side of the valley, had to advance in attacking it. Very often people, on first coming to look at the position held by the French, are rather inclined to wonder how the German guns were able to hold their own, in one part especially, of the ground on which they were, viz., on the Folster Heights, which are much lower than the French Heights. I think, on the contrary, that the real difficulty was for the French guns to hold their own. You will see as soon as you are on the Rotherberg that the only place from which the French guns could get any effective fire was the crest, right on the sky-line. Even there they could only get a single battery to work. The lower heights on the other side gave ample opportunity for a very much more concentrated fire upon the battery and upon the troops than could be returned. The infantry could barely maintain their position at all, because they could scarcely show over the crest, and only from the crest could they fire on the steep hill-side. Very similar was the greater part of the entire French position, which ran further back into the depths of the Spicheren Heights. There also the ground was higher on the French side than on the Folster Heights, which was the most important position occupied by the German guns in that battle. The French were only able to get their effective fire by going clear on to the crest line, whilst the German guns, in the meanwhile acting against them, were firing upward. This upward fire of the Germans was much more effective than that of the French from the high gronnd.

I want to suggest that we are not a little apt to attach too much importance to mere command in the sense of superior height. So far as the experience of the 1870 campaign goes, that is certainly the conclusion one is inclined to draw. I shall give you other instances of it. The tendency of great height above an object is to produce a plunging fire, a fire which

makes the bullets pitch down into the ground without any of that grazing movement which is so effective. On the other hand, the fire from lower ground, when directed against high ground, very often prohibits the use of the crest line, the only place from which the opposite artillery can effectively work. It is much more easy to see guns standing out on the sky-line than it is to see guns with a dark background. Firing up against the sky-line is, therefore, much more effective than firing down from it. Hence from this aspect of the question, as well as the other, it by no means necessarily follows that guns on higher ground have an advantage of position. Nevertheless, the inference that such lower positions are necessarily the best, because the Germans often occupied them and often succeeded in them, was a little too strongly pressed on us by some officers who came back from the immediate experience of the 1870 campaign. I say this because I believe myself that the fact was that in most of these instances the one thing the Prussians strove to do was to mass their guns and to concentrate their fire. They chose these positions because they could not help it, and not because they looked upon them as the better. At the same time, in so far as that experience goes, it certainly tells rather in favor of less commanding than of more commanding ground. I find, to my surprise, that an impression exists that those conditions, which made glacis slopes the most favorable for guns in the days of Napoleon, passed away with smooth-bores. I believe, on the contrary, that any one who closely studies the ground of the 1870 campaign will agree with me that such slopes favored rifled guns then at least as much as they formerly did smooth-bores. Now that our range is so much greater than it formerly was, the uncertainties of range are far greater than they then were. Plunging fire makes every error of range tell severely against the efficiency of fire. A grazing fire is effective with a wider error of range.

There is one little incident connected with the actual capture of the Rotherberg worth noting, viz., the pushing of an artillery battery up the hill of the Rotherberg itself soon after the advance of the infantry. The fact that this battery was able to sweep the narrow ridge of the Rotherberg was a most effective support to the infantry in their advance, and was a very important element in the actual capture of the place by the infantry. That capture, again, to a certain extent illustrated the value of the coöperation of the two arms. Here there was not room for more batteries on either side, so that no question of concentration arises. A second battery was in fact sent there, but could only find room for two guns, till the French had been forced back.

I turn next to the battle fought after Weissenburg, when the Crown Prince of Prussia pushed on across the Vosges and found MacMahon's army in position in the neighborhood of Wörth. It was then that I think the most interesting artillery questions were experimentally decided. They are, at any rate, supplementary to those dealt with by Prince Hohenlohe, which are for the most part those arising from the experience of the actions of Mars-la-Tour, Gravelotte, and Sedan, in which he was personally present.

Now the character of the battle-field at Wörth is this: The French army was on some high ground, with a series of spurs, running out from the

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main position down towards a wide plain with a rather troublesome little brook to cross in the middle of it; and that over that wide plain the Germans necessarily had to advance in order to attack the position, which was strengthened by the village of Fröschwiller in the centre, with Elsasshausen on the right centre. The position was weak in this respect, that it rested on woods on either flank. The conspicuous feature of the whole battle was the enormous concentration of the Prussian guns, from, at all events, the time that the Crown Prince took command of what had at first been a very helter-skelter unorganized affair.

Of some points connected with that concentration I have more to say, but I must first touch on an earlier phase of the battle. As to the cause which produced in this instance the disorder of the fight, there is a point in the use of artillery to which it is worth while to draw the attention of infantry and cavalry officers who may have artillery under their command. An officer who was not an artillery officer produced an effect by his misuse of artillery in the beginning of the action which ought to be realized by everybody. A general officer was in command of the advanced guard of the 5th Corps. It was lying opposite the little town of Wörth, which is in the middle of that valley of which I have spoken, between the two lines of hills, one of which was occupied by the Germans and the other by the French. This general officer saw, as he thought, a tendency on the part of the French to retire, and in order to make sure whether they were retiring or not he allowed the single battery which he had with him to open fire upon the French. It was all very well, as far as his own local position was concerned, that he should do so. But there was one effect of that opening of artillery fire which was much more important than any local action, one which it was difficult to stop when once started. The 5th Corps was lying in front of the French position along the ridges of the spurs and slopes of which I have spoken. Against the left of the French position, to the right of the 5th Corps, there was moving, far out of sight, a Bavarian corps. The Bavarians had orders to support the Prussian 5th Corps if that corps should become seriously engaged. The sound of the guns brought in the Bavarians to the attack on the left of the French position, and also caused the 11th Corps, which had bivouacked, to begin to move up to the support of the 5th Corps. The Crown Prince was most anxious not to have any battle take place that day. All his plans were arranged for the gradual concentration of his forces with a view to fighting on the following day. All his orders were upset and thrown out by the fire of those guns in the morning. For though, as soon as he heard the beginning of the fight, he sent off orders to stop it, the thing had already passed beyond his control. The Bavarians were, as a consequence of this message, drawn out of the fight; but the 5th Corps themselves had in the meantime been drawn into it in order to support the Bavarian attack. To repeat—the advance guard artillery fire of the 5th Corps first of all led the Bavarians to attack; and then the 5th Corps itself had necessarily been thrown in, because they heard the sound of the Bavarian attack. This little starting-point had still this further mischievous result, that now the 5th Corps commander found himself so completely involved in the battle that he was obliged to write to the Crown Prince say-

ing that he could not withdraw his men, and had been obliged to ask the support both of the 11th Corps on the left and the Bavarians on his right. A further result of the original mistake and its correction was that, when the Bavarians went in again to the fight, they were under all the disadvantage of having once put their men into battle and having had to pull them out again, which is about as a bad a thing as can be done for the effective fighting of any body of men, and consequently the Bavarians never recovered it, and did not fight properly all the day afterwards. So that the use of guns in that sort of way in local operations needs the most cautious and anxious care, because of the effect which it may produce in far more important matters. That is a point in the use of artillery worth the notice of officers who are not artillery officers, because in nine cases out of ten such a command will fall to their lot, since generally in the army it is an accident when the senior officer on the spot happens to be an artillery officer.

The next point in the conduct of the battle to which I want to direct your attention is this, that the difficulty of the assault on the French position by the infantry lay in the wide valley and the stream which it was necessary to cross, in order to attack the heights which were occupied by the French. Had the infantry been obliged to do it whilst the French were in complete possession of the crests of the ground which gave them a sweeping fire over the valley, I do not think that the Germans ever could have crossed it. But on the slope which immediately faced the position, and which was much more continuous than the French slope—the French position being broken up into a series of spurs running down towards the stream—the Germans arrayed the artillery of the 5th Corps and part of that of the 11th Corps in one continuous line as nearly as possible, the 5th Corps actually in one continuous line, and the 11th Corps in nearly a continuous line on their left. With that mass of artillery the Germans were able to forbid to the French infantry precisely those positions from which alone the infantry could bring an effective fire to bear upon the valley. That view of the sequence of events would perhaps not be deduced from merely reading the Prussian Official History. Its authors knew very little of what had happened on the French side. But if you study the ground and compare the Official History with such French narratives as we now have, I do not think you can doubt that that is the true explanation of the facts.

After a time the Prussian infantry of the 5th Corps forced their way across the valley, got on to the slopes beyond, became closely involved in the intricacies of the ground with the French infantry, and thereby covered the fire of their own guns. Then gradually the advance of the Prussian infantry of the 11th Corps on the German left, and against the French right, out beyond a long line of wood (the Niederwald), prepared the way for a fresh advance of the guns. It happened thus:

Whilst the Prussian artillery were on the slopes on the further side arrayed in that long line of guns, the artillery of the 11th Corps had command of the sweep of ground to the German left of the Niederwald, and greatly assisted the infantry advance against it by making the Lisiere untenable. The Prussian infantry, with the support of that artillery fire, after a time swept into the Niederwald, and after a long fight drove the French

out of it. As long as the French were in occupation of the Niederwald it was impossible for any Prussian guns to cross into the valley between it and the spur on which stood the village of Elsasshausen. But as soon as the Niederwald had passed into the possession of the Prussian infantry, it then became possible for the Prussian artillery of both corps to advance across the stream and turn up this valley between the Niederwald and the village of Elsasshausen. As soon as they could do it they did. That enabled the guns to give a support to the attack of the infantry upon Elsasshausen, which they could not have done from any of their earlier positions; and in that attack on Elsasshausen they were able to set it on fire and make it difficult for the French to retain it even before the infantry attacked it. So that the coöperation of the two arms, the interchange of positions, the advance of the one, which enabled the other to move forward, has always seemed to me one of the most interesting features of the war, and indicates that in the future we shall have to look out for assisting one another in this sort of way. In this battle those positions which were vital to the advance of the Prussian infantry were made possible for them by the action of the Prussian artillery, and the consequent success of the infantry enabled the artillery in turn to advance. To resume. The action of the Prussian artillery made possible the infantry advance upon Elsasshausen. In the course of the fight consequent on this advance, it happened that there was a certain little wood outside the Niederwald into which the Prussians had been driven back by a counter-attack. But as soon as the Prussian guns had succeeded in getting into a position along the valley between the wood and Elsasshausen from which they fired on the flank of the French counter-attack, the relieved infantry at once repelled the French, and finally drove them off. This is another instance of that continual series of mutual support and interchanges between the arms which took place in the battle. There was yet another. The possession by the German infantry of the environs of Elsasshausen enabled the guns to make a complete wheel to their right and bring an overwhelming fire to bear upon the last French stronghold at Fröschwiller.

There is another curious point in the character of the position taken up by the great array of guns at Wörth which has reference to the question of command on which I have already touched. The point like the other I noticed, was, as I think, rather exaggerated by some officers, who soon after the war enlarged on it. Still, it is worth stating, and is an interesting point as far as it goes. The hill on which they had to take up their position fronted towards Wörth on the opposite side of the valley to that from which the heights of the French position rose. The Germans came over the top of it. They did not fire from anything like the crest of the high ground, but came down the slope and came into action behind an underfeature. Now it has been said in relation to that, that it was a deliberate choice of ground on the part of the Prussians, who calculated that the French shells, when directed against that slope, would strike perpendicularly into the bank, and so not produce nearly the same effect as they would have done if they had been directed over the crest of the hill, so that the die of the ground would more nearly correspond to the trajectory of the

shot. I think it is quite possible that to a certain extent the character of their position may have tended to save the Prussians from the apparently tremendous exposure which they made of themselves in that long array opposite to the French. But I am firmly convinced that that was not the motive that made the Prussians go there: the motive that took them there was that it was the best place from which they could see the French and hit the French. They trusted entirely to the enormous concentration of their artillery, and instead of choosing a place where they would be least exposed to the French shells, they preferred to be in a place where, by bringing an overwhelming fire to bear upon the French guns, they could most effectively knock them out of time, and by so doing protect themselves from the French fire. It was a question of the great efficiency of their concentration, of the effect produced by their concentrated fire, and not of the actual local advantage of the ground.

There is yet one other little point in this battle that I want to touch upon—a curious incident that happened in connection with that Prussian battery that opened the fire, and in consequence did so much mischief to the Prussians. In reply to its fire there came into action *successively* four French batteries. The Prussian battery was able to knock them all out of time. Not only in this battle but throughout the campaign the Prussian fire was incomparably superior, battery for battery, to the French. This was certain, and there were a great many different reasons. In the first place, the French gun was defective in its mechanism. It could only be used with shrapnel and a time fuse at two ranges. But the more serious matter was that their peace training had consisted in dashing up into position, battery by battery, firing off their guns anyhow, just as they chanced; whilst, on the other hand, the Prussians had been steadily practising to deliver a really effective fire, and therefore the Prussian battery had the advantage against each of its separate assailants. Obviously, the reason why that battery succeeded in knocking all the four French batteries out of time was, that the French batteries had come up separately, and did not concentrate their fire upon it. If the four French batteries had all attacked it at the same time and concentrated their fire upon it, it would have been impossible for that single Prussian battery—exposed by itself, as very rarely indeed throughout the war any single Prussian battery was—to have held its own.

An incident, almost exactly similar in the number of batteries engaged, illustrates this perfectly. It took place at the battle of Colombey, which was fought by the army of Spicheren, and not by the army of Weissenburg and Wörth. The 6th Prussian light battery of the advanced guard was pushed forward by itself. Three French batteries, not separately, but concentrating their fire upon it, came into action, and it was knocked out of time immediately, and had to be withdrawn. The battle of Colombey is remarkable for the fact that out of the small number of cases in the war in which isolated Prussian batteries came into action, four occurred in it. Of these, one is the case I have named above. In a second instance a battery which came partly under infantry, partly under superior artillery fire, was knocked out of time so rapidly that it only fired twenty-eight shots before

it was forced to retire. It was apparently not able to come into effective service again throughout the battle. The two other cases were not very significant either way. In one of them the battery, though at first by itself, was closely supported by several others, which in fact soon afterwards passed ahead of it. In the other case the battery only fired parting shots upon the retreating French, was not really opposed, and coöperated with others.

I could hardly now go into detail sufficiently to establish the statement I am going to make, but I think any one who closely studies the action of the artillery at Colombey will come to the conclusion that the misuse of the artillery by the 7th Corps is as instructive as the excellent use made of it by the 1st Corps. There is hardly a principle which the war has taught us which was not conspicuously violated by the 7th Corps, and it suffered accordingly.

A propos to the question of the concentration of artillery fire, I should like to say a word or two about a point with regard to which I think any officers who will give us the benefit of their experience on active service will agree with me. I am going to make a statement which I have never seen put in print, but I have always found that those who had been under artillery fire agreed with me, and therefore I should like to submit it to you. How are we to account for the enormous relative advantage which artillery gets when it is concentrated, as compared with the effect it produces when it is distributed? There can be no dispute whatever as to the fact that we do get this quite exceptional gain by concentrating fire. The causes of it are not so immediately obvious. I think the explanation is to be found in certain experiences of the effect which artillery fire, when you are under it, produces, and for which it is necessary to appeal to the experience of those who have been in that condition. Now I think I am stating facts which will be acknowledged by all who have had that experience when I say that any man who, for the first time, finds himself exposed to artillery fire, dislikes it exceedingly when it first begins. But as time goes on, if the fire be moderate, so that there is time to observe it, then there is time also to notice that uncommonly few shells under any condition—from the artillery with which we have had hitherto to deal—produce a material effect. They keep passing, perhaps very close, over our heads, and then plunging into the earth without doing any harm—very often going into the ground without even bursting. Under these circumstances, even if after a time we see that several infantry men or a horse or two and three or four men are knocked to pieces by a single shell, yet we have time to reflect that this is a very rare incident. The chances are enormous that very few of the shells we see will do the like. The moral effect has time to wear off. But if, instead of this moderate dropping fire, the shells from many guns are concentrated on the same spot, then, whilst the air is still full of shells, you see perhaps, the whole of the men and the horses attached to one of your own guns blown to pieces. In the next few seconds, assuming only the same proportion of hits as with the dispersed fire, a second gun team is blown to pieces. Now, even if it be only one shell out of a hundred each time that is producing such terrible destruction, yet the concentration will have this moral effect, that all the shells still in the air will seem to be charged with

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the power of producing that destruction which you see going on under your eyes, and being rapidly repeated. Therefore, as I believe, the difference between the effect of concentrated artillery fire and one that is dispersed is this. With the dispersed artillery fire—when there is plenty of time to notice how comparatively few shells do hit or burst—all the shells that do not cause material destruction weaken the moral effect of the one that does actually destroy. On the contrary, with very concentrated artillery fire, where the discharges come rap, rap, rap, one after another as fast as they can, so that the air seems full of shells, every one of the shells that do not hit yet tends to enhance the moral effect of those that do; because the whole time you are seeing destruction produced. There is not time to count at all, or to dwell on the fact that the shells are not all producing destruction. I have offered that explanation several times to officers of considerable experience in war. They have invariably said that they entirely agreed with me, that that is the true analysis of the kind of moral effect produced by shells. I think, therefore that that is probably the reason why—or one of the great reasons why—the concentrated fire of artillery tells so enormously as it does. In every separate action that one has to deal with, you find everywhere that the practical victory-winning effect of the concentrated fire is quite out of proportion to the effect which is produced by a dropping fire delivered under the idea that it is necessary to be firing somewhere at something all the time. I should not insist on this so much but that, despite all our experience and all that has been said and written on this matter, the excuse that you ought to be firing at something and that you want every part of the enemy's line to feel your fire, has been given for what is called "the distribution of artillery fire." There has been a dangerous effort made to have the idea introduced into the Drill Book.

I am afraid my time is rather running on,* and in order to get through all I have to say about these battles, I shall only touch on one other of the incidents of that curious battle of Colombey. The battle itself was, like the others, brought on merely by the action of an advanced guard. It was consequently a battle in which the Prussians as usual kept on tumbling into the fight, detachment by detachment, and corps by corps, or rather division by division. This destroys much of its interest as a tactical study on the larger scale for any of the arms. But there is one very singular artillery incident in it, which I give you for what it is worth, and from which you can make your own deductions.

There is a high bit of ground at Bellecroix on the French side of the battle, and there is almost immediately below it another spot close to the little village of La Planchette. Into almost the lowest part of this—not with deliberate choice for advantage of position, no doubt, but simply from the movement of the battle—four Prussian batteries had advanced. From that low ground they came into action against the French guns on the high ground at Bellecroix, and afterwards they fired in another direction whilst still exposed to artillery fire. The experience that these Prussian batteries had was that, though the French guns from their high position sent a perfect storm of shells and bullets in their direction, nearly the whole discharge went over

*The Lecture was given extempore.

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their heads and missed them almost entirely. Now I do not by any means, in quoting these repeated instances of this kind of experience, want to assert that whenever you have the chance you should establish your guns in a low and never on a high ground; but there were a series of experiences which occurred in the course of that campaign which certainly have left me very strongly under the impression that we are apt to attach a little too much importance to getting on high ground and firing down into the low ground. Certainly there were a series of experiences where Prussian guns produced a considerable effect when firing up hill, and escaped considerable loss when fired at from higher ground. In each case they were probably screened by some feature of the ground. It is often a matter of very nice judgment to determine what will screen guns. In the particular instance I speak of, it was no doubt the convex face of the hill which gave cover to the guns on the lower ground, so that the French shells shot clean over them.

I want to say a few words about Mars-la-Tour, and then about Gravelotte, if I get time, and if you will bear with me. I am not going to say much on Mars-la-Tour, because it is a battle on which Prince Hohenlohe has written much. There is, however, an expression used in his book which is, I think, a little misrepresented and misunderstood. For my purpose it will be sufficient to say that the general story of the battle was this: that when the Prussian infantry, the 5th and 6th Divisions, made their two separate attacks upon the French army in the extraordinary way they did, the commander of the corps, in order to establish connection between the two separate attacks, gradually succeeded in arraying a long line of guns between these two divisions, so that one division was fighting on the left, and the other on the right of the guns. Prince Hohenlohe remarks that he came to the absolute conviction on that occasion, that a line of artillery was able to hold its own against any attacks, skirmishing or other, and that they were not, under any circumstances, liable to be driven back so long as their flanks were perfectly secure. He of course assumes the other actually existing conditions—viz., the ground open in front of the guns and a wide range of fire. Now, I have several times noticed that a deduction has been drawn from that, which appears to me to be an entirely false one. That deduction is that because those guns, being thus in line with a full sweep of fire to their front, were able to drive back any infantry attacks that were made upon them: therefore, they would have been able also to get into that position in spite of skirmishing or other fire. I think it is more than doubtful whether they would have been able to get into that position in spite of skirmishing fire. There is a wide difference for guns between being able to hold a position when established there, and being able to advance under fire to take up a position. The two things have nothing to do with one another. The way that the Prussian gunners got into their position was that during the course of certain cavalry charges, and some other incidents, which for a time disturbed the movements of the French infantry, the guns seized the opportunity to advance and to shorten their line across from flank to flank. Previously they had taken up the best positions they could seize in a long irregular curved line. During that period, before any straight line was

formed, batteries had been repeatedly driven back by infantry fire. After their advance during the cavalry charges the line of guns was straightened up. They were then able to bring a tremendous sweeping fire of shell, and, if necessary, of case, over all the ground that could possibly be used in advancing against them. But so far as I can see from such study of the battle as I have been able to give to it on the ground, there is nothing to justify the belief that they could have moved into that position in the face of infantry fire. That is the only point I wanted to touch upon in the Mars-la-Tour business, because I think there has been some misunderstanding about Prince Hohenlohe's words. There are of course other artillery questions connected with the battle—some, I think, of considerable interest—on which Prince Hohenlohe has not touched. But as my time is getting short, and the Prince has dealt in great detail with the artillery questions of this battle, I pass on.

The battle of Gravelotte is of course full of matter connected with artillery, more than I can possibly refer to this afternoon; I propose only to take one incident which is apt to be misunderstood. The battle began by the pushing forward of the guns of the 9th Corps on to an underfeature that ran right up into the great glacis of the French position.

This movement was made because the general commanding the corps—at first at least—thought he was on the flank of the French. He entirely ignored the fact that the French position stretched out to St. Privât, far away behind him. When he found out his mistake, he still could not resist the temptation to "surprise" the French. Now what I want to point out is, that though the Prussian Official History, in giving the description of that incident, lets you see that the guns suffered appallingly, and that on the whole it was not a very successful operation, yet the historian does not frankly tell you the plain fact. He ought not to tell you it, because there are some things that an official historian must conceal. It was simply a hideous blunder on the part of the man who commanded the corps, and pushed the artillery forward into that position, when there were no cavalry to support them, and no infantry. The commander did it because he was not a very brilliant soldier, and it is completely recognized in the Prussian army that no other explanation of the proceeding is possible. I have spoken to some men who were on Prince Frederick Charles' staff at the time, and they say that that is the view he took of it. I am very anxious that it should be realized that, important as it is, that guns should be ready to go in when the right opportunity has occurred, and when the necessities of the infantry require that they should do so, to any range, any closeness, that may be necessary, yet such an operation as that of pushing forward guns in the way it was done in this instance is not a model for imitation, but a thing that should be avoided. It was a quite indefensible mistake.

On the other hand, a certain position that was taken up, more to the rear, by a number of guns of the 3d Corps made them exceedingly effective. It was not merely that the 9th Corps guns were sacrificed. They could not from where they were do useful work. The 3d Corps guns not only suffered less, they were much more efficient. There is a certain tendency to adopt a kind of heroic tone about pushing in the guns which ignores the

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fact that you want, for the purpose of winning victories, to employ each arm under the conditions most favorable to its effective use. In pushing artillery to the front, such a position should be chosen as will enable them to take full advantage of the long range and special qualities of the arm, and not one, like that of the 9th Corps artillery, which will expose them to serious disadvantage.

Before I finish I want to touch upon a question which is closely connected with this last point. An expression is commonly used, and I have myself insisted upon the fact as much as any one else, that it is important never to have guns out of action as long as you can get them into effective action. In the case of infantry, when troops are drawn into a fight, they are so far expended that you cannot afterwards exercise any control over them. That is not the case with artillery. You can usually just as well draw them out of a fight where they are in their proper positions in action as when they are limbered up. Therefore, the mere necessity for retaining your hold upon artillery does not make it necessary for you ever to keep them out of action. But I think there is a deduction, which is apt to be made from that, which is not a true one, and that is, that therefore the guns should invariably begin firing as soon as they get on ground where they can see some enemy or other. To a certain extent that was a characteristic of the 1870 campaign on the part of the Germany army. When dealing with the French they felt that they were bound as rapidly as they possibly could to utilize their greatly superior numbers, discipline, organization, and equipment ; and they simply went in for hitting as hard as they could. There was very little manœuvring in the old sense of the term, very little of that kind of skill which is apparent, for instance, in all Napoleon's battles. It was almost entirely mere hammer, hammer, hammer.

But I cannot bring myself to believe that that old principle of Napoleon's, which he showed to us in battle after battle, that he who suddenly and unknown to the enemy brings on the decisive point an overwhelming mass of artillery fire, is almost sure to win the day, has ceased to be operative in our times, when artillery has become so enormously and rapidly destructive as it is. Therefore, I cannot help believing that in many circumstances it is not worth while to take the opportunity of inflicting a certain limited loss upon your enemy, of blazing away the first few shells that you have, and thereby informing your enemy of the exact position where your guns are. Very often it seems to me that when you have made up your mind where that decisive position is towards which it is worth while to concentrate an overwhelming mass of artillery fire, it is better to follow out Napoleon's old principle, and give your enemy plenty of time to make a mistake before you take advantage of it. On the other hand, if you simply blaze away, you lose the enormous advantage of delivering your blow at the right moment as well as at the right place.

The two things are very nicely balanced against one another. I hope I have made it clear that I am keenly alive to the importance of utilizing your guns as long as you can. You ought not, as with infantry, to keep them out of action in order to be able to employ them. Still, I do think that where you have only the opportunity of inflicting some com-

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paratively insignificant loss, you ought not always to seize it. Guns have that peculiarity which is indicated by the incidents which followed at the battle of Wörth upon the firing of the 5th Corps advanced guard battery. Their sound indicates to friend and foe that serious action is contemplated at the point where they are heard. A premature discharge of artillery fire delivered merely in order not to let the guns be idle may convey to an enemy information which will be cheaply purchased by the loss he will have to sustain from their fire. I do not think that there is the least difference of opinion on this subject among those who have really considered it. I should not mention it but that I know how such phrases as that about the importance of having guns in action rather than limbered up come to be misapplied and misunderstood when they are merely taken as catchwords, without reference to the experience on which they are based.

In conclusion, I will only say that I have not attempted to do more than illustrate by examples the numberless points connected with the use of one particular arm which closely affect officers of the other arms of the service. It would be very easy to multiply examples from these battles. My object is only to bring home to such officers as have not hitherto carefully studied these special artillery questions, their close connection with matters for which they are in the event of war almost certain to become personally responsible. If I have at all succeeded in interesting them in them, my chief object has been attained.

NOTE.—The term "distribution" is susceptible of two different meanings. In the forthcoming Drill Book it is used merely to imply the regulated employment of the artillery of an army for such tactical purposes as circumstances demand. Obviously in that sense it is a very useful word. The word has, however, been also used to cover a notion that we ought from the beginning of an action to take care that none of the enemy can fire upon us without our firing upon them. It is this notion which it is my object to combat in setting "concentration of fire" in contrast with "distribution," or, what is in this sense the same thing, dispersion of fire. The discussion, which followed the lecture and will be here published next month, brings this out better than the lecture.

Military Notes.

WELDON'S RANGE FINDER.

COLONEL WELDON has recently considerably modified and improved his ingenious range finder, and we illustrate herewith the form in which it is now manufactured. It consists of a metal box, the lid of which is shown open in the engraving, and on this lid are fitted three prisms which are the essential constitutents of the instrument. When the lid is closed these, with the compass and level, also attached to the lid, lie inside the metal box, and are thus thoroughly protected. The upper prism marked 1 is a right-angled one and is mounted with the right

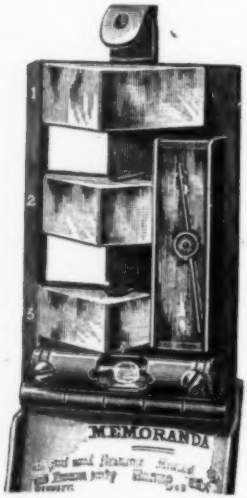
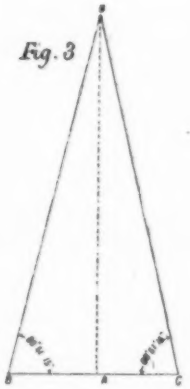


Fig. 2.

Fig. 3



angle outwards; looking into the left-hand corner of this prism one will see in it, by double reflection, objects lying on one's right hand. Below this is a second prism with a principal angle of 88 deg. 51 min. 15 sec., and below this a third with a principal angle of 74 deg. 53 min. 15 sec. A level and a compass are also mounted on the lid as shown. To use the instrument the observer stands so that the object the range of which is required

lies on his right hand, and looking into the left-hand corner of the upper prism views it there by double reflection from the internal faces of the prism. At the same time looking through the opening shown in the lid below the prism he selects some object, which appears nearly in line with the image seen in the prism. He then shifts his position till these two images coincide, in which case lines joining him with the two objects will make right angles with each other. In Fig. 2, O is the object whose range is required, D the object seen by direct vision, and A the position of the observer. The observer now marks his position on the ground, and shifting the instrument looks into the left-hand corner of the second prism, when he again sees the image of the object, whose range is required, by double reflection, but lying now to the right of the object D. He then retires, keeping in line with A and D, till he reaches B, when the two images again coincide, the lines joining them and the observer now makes an angle of 88 deg. 51 min. 15 sec. Then in the triangle O B A, O A=tan 88 deg. 51 min. 15 sec. ×A B=50 A B. The length A B is easily paced, and the distance O A is 50 times this length.

A longer base, and probably greater accuracy, can be obtained by using the second prism only, as indicated in Fig. 3, in which case the distance of the object is 25 times the distance B C. This second prism is, however, best adapted for predicting the range of moving objects. Three observers are required. Two of them have finders, whilst the other measures the distance between the two. The first two observers separate, and No. 2 takes a position such that the object is reflected to one side of observer No. 1, whom he views by direct vision. As the object continues to move its image gets nearer and nearer No. 1, who during the whole of the time moves a little to one side or the other, so as to keep the image of the object constantly in line with No. 2. Just as the image of the object gets very near No. 1, No. 2 calls out "Ready," the distance between the two observers is taken by the third, and when the image of the object actually falls on No. 1 its distance is just 25 times the distance between them, and the guns set to this range are fired by word of command from No. 2. By using the third prism in conjunction with the second a still longer base of one-fourth the distance of the object can be employed. The range finder can also be used as a depleidoscope for transit observations. For this purpose it is mounted on a block of wood by means of elastic band and levelled by the level on its lid, being at the same time set in the meridian of the place. The lid is opened to make an angle with the horizon equal to the latitude of the place of observation. On looking into the upper prism two images of the sun will be seen on each side of the apex of the prism, which gradually approach each other as the sun nears the meridian, and finally coincide as it passes it, the time of which being noted gives the longitude of the place.

Extensive trials of the instrument have been made both in this country and in India, which agree in showing that the average error in using the instrument is about 2½ to 3½ per cent. Colonel Weldon's address is Earlimount, Earley, near Reading.—*Engineering* (London).

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CORDITE.

An interesting chapter, principally upon the subject of cordite, is contributed by Major Orde-Browne to the Naval Annual for the current year, under the head of "Ordnance." Major Orde-Browne quotes from a paper published by Captain Andrew Noble, some very important statements as to the value of the new smokeless propellant, compared with that of ordinary black powder. The following table exhibits the result of experiments carried out with the two, in pressure, muzzle-velocity, and muzzle-energy, 4.7-inch Q. F. guns being used:

	Charge in lbs.	Mean press. tons p. sq. in.	Muzzle-vel. ft. sec.	Muzzle-energy. foot tons.
Service pebble.....	12	15.9	1,839	1,055
Cordite.....	5.6	13.3	2,146	1,437

Thus we observe that the comparison is every way in favor of the smokeless compound which has been approved for service both by our naval and military authorities.

It seems, however, that another very striking fact has been elucidated as the result of investigations made in America with explosives of this character. The craze for weapons of inordinate length, which has terminated in the development of a gun by M. Canet of no less than 80 calibres. must receive a violent shock if the finding of the American artillerists be established. Now, as some modification of cordite or a similar compound is apparently to be the propellant of the future,—certainly, so far as regards the charges for quick-firing guns—it seems that we shall lose rather than gain an advantage by indefinitely increasing the length of the piece. This view is, moreover, one which has long been held by many practical gun manufacturers, and in this connection we may quote the remark made by the intelligent young Prince of Portugal, after witnessing the fire from one of M. Canet's very long guns, and observing the extreme vibration to which its muzzle was subjected: "C'est un fouet, Monsieur, un véritable fouet!"

It is satisfactory to learn also from Major Orde-Browne that experiments made to ascertain the keeping properties of cordite, both in the extreme cold of Canada and in the intense heat of tropical stations, have incontestably proved its stability under all circumstances, although, oddly enough, high temperatures appear to be a more severe test to it than very low ones. It is indeed a matter for astonishment that gun-cotton and nitro-glycerine, both treacherous in themselves, should prove to be, when combined, a singularly safe explosive. But such is the case. In point of fact, it is difficult to make the compound explode. A large quantity of cordite was set on fire and burned slowly without exploding, whilst shells were fired into the mass without effect.

For all this cordite requires to be understood if it is to be employed profitably. The idea that the powder-chamber can be reduced considerably, owing to the small dimensions of the charge as compared with one of black powder, is quite erroneous. The special battery of 12-pounder cordite guns which was employed in the Hants manœuvres in 1891, and which had modified chambers, strained its breech-gear very much during the firing,

showing that abnormal pressure was developed somewhere. It has been found, too, in Germany, that three times the space required for the smokeless powder must be allowed in the chamber for the expansion of the powder gas. This point has escaped, we are told, the attention of several of our artillerists. But it stands to reason that it is of the utmost importance. If a charge disproportioned to the size of the chamber be employed the strain upon the breech-gear becomes terrific, and volumes of gas escaping through the threads of the breech-screw show the danger of a charge of cordite which is unduly bulky. The cartridges containing smokeless powder, which are made up for the German field ariillery, are so small that three of them can be placed at one time in the ordinary chamber of a field artillery gun.

Another great advantage of cordite is its cleanliness. The products of ammotine, as Major Orde-Browne remarks, "are wholly gaseous." This quality, too, causes the loud report observable with gunpowder in blank charges to be almost entirely absent, although the discharge of cordite ammunition gives a peculiarly sharp detonation. When fired from ordinary guns cordite has, however, one very grave disadvantage, and this has been discovered by officers commanding French artillery batteries, as well as by those of our own country and Germany. The expansion is so rapid and violent in its action that it requires the presence of a metallic cylinder within the chamber to receive the blow. If this is not done the sudden expansion impinging upon the vent destroys it after a certain number of rounds, and the gun requires re-venting. This is a serious matter of which account must be taken. Last summer several field batteries which were engaged in the manœuvres around Aldershot had their 12-pounder guns severely injured by the use of cordite charges, although ample space was left for expansion, and small quantities of cordite were employed. All this points to the conclusion that the introduction of a new quick-firing gun for field service is a necessity. But the cylinder for the cartridge is a *sine quâ non*. The number of gunners is thereby greatly reduced—the rapidity of fire is enormously increased. The necessity for ramming and sponging is entirely obviated, and the advantages of cordite are developed to their fullest extent.—*Army and Navy Gazette.*

THE AUSTRIAN RED CROSS SOCIETY.

The *Militär-Wochenblatt*, No. 54, gives an extract from a report on the present state of the Austrian Red Cross Society. According to the report, the Society has at its disposal 32 completely equipped transport columns for wounded, 2 transport columns of material, and a field hospital of 200 beds. The Society numbers 45,128 members. In case of war it has at its disposal accommodation for 166 officers and 7897 men in hospitals, and for 10 officers and 748 men in convalescent homes, and has arranged for 50 halting stations for the sick, and for the care in private houses of 1960 officers and 8035 men. Further, it can count upon accommodation in religious hospitals for 5 officers and 1567 men, and for 1926 men in similar convalescent homes. The full report will be found in *Das Rothe Kreuz* Nos. 3 and 4 of 1893.—*Journal of the Royal U. S. Institution.*

THE PLOUGH FOR FORMING SHELTER-TRENCHES.

Experiments have recently been made, under the orders of General Morin, with the object of determining how far the ordinary agricultural plough can be utilized to assist in the rapid formation of shelter-trenches. The ploughs employed were arranged, in detachments of eight each, which followed each other in échelon at a few yards distance, and so made eight furrows side by side. The loosened earth was easily dug out with a shovel, or even by hand, and formed into a breastwork. Thus, on the first journey of the detachment of eight plows, the soil is loosened for a depth of about 6¼ in. and along a track about 8 ft. wide, which represents the width of the trench. After removal of the soil, the trench is deepened by a second journey, and so on, two ploughs being presently taken out of the trench and run along the front of the breastwork so as to loosen soil with which to increase the mass of the latter.—*Journal of the Royal U. S. Institution.*

A NEW POWDER.

Some details regarding the mode of preparation and remarkable properties of the new Silesian smokeless powder (Plastomenit), invented by Herr Güttler, are given in the May number of the *Neue Militärische Blätter*. There appears to be little doubt that this is the most powerful and lasting explosive yet produced, and according to the account given in the journal above quoted, the explosive action is more equable and regular than that of any known powder.—*Journal of the Royal U. S. Institution.*

THICKNESS OF MATERIALS AS A PROTECTION FROM FIRE.

According to the "Feldbefestigungs-Vorschrift, 1883," which has been approved of officially for the instruction of the pioneers in Germany, the following thicknesses of the various materials are required as a protection from fire :—

FROM RIFLE FIRE.

Sand	29½ inches.
Ordinary earth	39 inches.
Laid sod and turf, or peat soil	79 inches.
Rammed snow	5 feet, 7 inches.
Corn sheaves	16½ feet.
Fir	39 inches.
Oak	24 inches.
Steel plate	about 4/5 inches (2cm).
Brickwork	19½ inches.

A double thickness of planks, filled in with 8 inches of finely broken stones.

FROM ARTILLERY FIRE.

From shrapnel and fragments from field artillery :

Earth	from 16 to 39 inches.
Wood as overhead cover	2 inches.

Garrison and siege artillery :

Earth	39 inches.
Wood as overhead cover	4 inches.

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From individual shots striking fair :

Field artillery :

Earth.....from 39 to 79 inches.
Brickwork.....39 inches.
Snow.....about 27 feet.

Guns of garrison and siege artillery :

Earth.....from 10 to 13 feet.

—*Journal of the Royal U. S. Institution.*

AVERAGE AGES OF OFFICERS IN THE ITALIAN ARMY.

On the 1st of January, 1893, the average ages of officers of the Italian army were as follows: Lieut.-generals, 61 years; major-generals, 56 years; colonels of infantry, cavalry, artillery and general staff, 53, 51, 52¾, and 51½ years respectively; lieut.-colonels of infantry, cavalry, artillery, and general staff, 53, 49¼, 50⅓ and 45⅓ years respectively; majors of infantry, cavalry, artillery, and general staff, 49¼, 45¾, 46, and 42 years respectively. In the first fifth of the captains, the average age was 46 2/12, 43 1/12, 39 10/12, and 36 10/12 years in the infantry, cavalry, artillery, and general staff respectively. The 56 lieut.-generals attained that rank at an average age of 54½ years, the youngest at 42, the oldest at 62; the 90 major-generals attained that rank at an average age of 53 years, the youngest at 46, the oldest at 62. The 333 colonels, including those of the general staff, attained that rank at an average age of 49 2/3 years, the youngest at 41¾, the oldest at 57 2/3.—*Journal of the Royal U. S. Institution.*

COLONEL VON LÖBELL.

Colonel von Löbell, who, for nineteen years, has edited that marvellous magazine of facts concerning military progress and the development of armies, the *Jahresberichte über die Veränderungen und Fortschritte in Militärwesen* is retiring from his responsible charge. We learn with much pleasure that his name is not to be dissociated from the work, for it will henceforth, by a pleasing compliment be prefixed to the title of it. The new editor is Lieut.-General von Jarotzky.—*The Army and Navy Gazette.*

NORMAL CAREER IN THE GERMAN SERVICE.

The normal career of an officer in the German service comprises:

7 to 8 years as second lieutenant,
5 to 6 years as first lieutenant,
9 to 10 years as captain,
5 to 7 years as major,
3 years as lieut.-colonel,
3 years as colonel.

Should he attain to the grade of general officer he has:

2 to 3 years as brigadier general,
4 to 5 years as division general.—*Revue de L'Armée Belge*, May, 1893.

XUM

Reviews and Exchanges.

History of the First Connecticut Artillery.*

IT is a handsome book that contains the history of the First Connecticut Artillery; and the history itself, consisting very largely of official reports, not only of the regimental officers, but of the generals under whom they were employed, is full of useful information on the conduct of an arm whose real work, both in quantity and quality, seldom has received the consideration it merits.

The book is furnished with some sixty illustrations, made directly from original war-time photographs, and with seven maps by which the reader is enabled to follow intelligently the operations from the defenses of Washington to the siege of Fort Fisher.

The time is divided into six periods, in the first three of which the regiment was under the command of Gen. Robert O. Tyler, a graduate of the Military Academy in 1853. "He found the regiment, compared with what he made it, an uneducated and undisciplined body of men. * * * True, he had rather a motley set, there being no uniform coats and but few presentable pantaloons, but whenever an effort at neatness was made the colonel's eye perceived it, and a compliment was sure to follow. Even the man that put blacking on his bare feet in lieu of shoes was thus rewarded for his pains."

Col. Tyler was succeeded by Gen. H. L. Abbot, of the U. S. Engineers, whose retained copies of correspondence are freely given and are "perhaps the most valuable and complete of all the records without which the history could hardly have been written."

The historian, Maj. Hatfield, also states that his regiment "was formed when no bounties were offered, that it was the first regiment mustered into the U. S. service for three years, a remarkable development of raw material through a fortunate combination of circumstances into an organization for war purposes that had no rival." And the claim is abundantly borne out by the record.

The key, however, to this fortunate combination is not, as might very reasonably be supposed, solely the character and abilities of the two well-known officers who were successively in command. Gen. Abbot acknowledges the nature of his material in saying that "the honor of the regiment seemed to be the first object of ambition with both officers and men."

But the point worthy of special notice is that the character and success of this organization were due "in a very marked degree to the judicious action of his Excellency, Gov. Buckingham, in laying down the principle that promotion in the regiment should be conferred as reward of merit and not as personal favor."

Each company commander was called upon for the name of his most meritorious

* *History of the First Connecticut Artillery, and of the Siege Trains of the Armies Operating against Richmond*, 1862–1865. By Maj. S. P. Hatfield, 1st Conn. Artillery. Press of the Case, Lockwood & Brainard Co. 1893.

non-commissioned officer. To this list field officers added at their pleasure. A board consisting of all the field officers, including the colonel, examined the candidates. Each field officer then prepared a list placing them according to his estimate of their merit. From lists so secured, including his own, the colonel made his nominations to the Governor.

This board also examined officers of each grade up to captain before promotion, and without exception nominations obtained as above were approved by the Governor and commissions issued accordingly.

Under such a system as this and under such officers as Generals Tyler and Abbot, no wonder that Gen. Barry should report: "The First Connecticut Artillery, in intelligence and the acquirements and services of its special arm stands unrivalled in the armies of the United States."

It was the most excellent of methods to bring individual worth to the front and eliminate from politics and patronage the influence they so commonly exert, to say nothing of that pernicious custom of election where easy temper and indulgent habit rather than capacity are the conditions of success.

The siege train accumulated in front of the Confederate camp at Yorktown consisted of

Two 200 pdr. Parrott rifles.	Ten 13-in. S. C. mortars.
Eleven 100 pdr. Parrott rifles.	Ten 10-in. S. C. mortars.
Thirteen 30 pdr. Parrott rifles.	Fifteen 10-in. siege mortars.
Twenty-two 20 pdr. Parrott rifles.	Five 8-in. siege mortars.

Ten 4½-in. Rodmans.

Three 8-in. siege howitzers, or 109 pieces all told.

Of these some fifty, including the heaviest, were put into position at distances varying from 3800 to 1900 yards in batteries built and building to the number of fifteen. No. 1 opened fire on the 30th of April and the rest would have opened by daylight of May 6th had not the wily Magruder disappeared a day or two before, having kept the Federals busy at parallel, platform and parapet for a good thirty days.

Then came the famous first peninsular campaign, the Connecticut artillery, like the rest of the line, fighting by day and marching by night until Malvern Hill finished the change of base, and the swap of York River for the James was complete, the laurels of Magruder losing most of their lustre in the final struggle,—is it not all written in the new book of Jasher to the 84th volume of which we have now reached through the labor of Colonel Scott and his successors?

Colonel Tyler's connection with the regiment ceased with the battle of Fredericksburg and General Abbot took command.

On looking over the file of orders following this change we note one upon the subject of company savings which is commended to our army Rothschilds. "By proper care," said the general, "there can be saved to each man monthly one dollar. Next in importance to the duty of saving is that of prompt and proper expenditure. Within fifteen days after the receipt of the money it must be spent to within ten dollars." This is a mathematical definition of the limit of gain and disbursement so clearly set forth that the wayfaring man though a fool may not err therein.

We next take up the siege train at Bermuda Hundred, May 20, 1864. At that time there were in position

Four 30 pdr. Parrotts.	Two 8-in. siege howitzers.
Eight 20 pdr. Parrotts.	Two 32 pdr. howitzers.

One 24 pdr. howitzer.

XUM

At a later period, July 11, 1864, mention is made of

One 13-in. S. C. mortar.	Ten Coehorn mortars.
Ten 8-in. siege mortars.	Twelve 4½-in. Rodmans.

And also of a siege train proper afloat at Broadway Landing, as follows:

Six 100 pdr. Parrotts.	Ten 10-in. mortars.
Fifteen 30 pdr. Parrotts.	Six 8-in. mortars.
Twelve 4½-in. Rodmans.	Sixteen Coehorns.

Ten 8-in. siege howitzers.

Batteries were supplied with ammunition on reports made daily at 6 P. M. of expenditures during preceding 24 hours with supply on hand. Mounted orderlies bring these reports to brigade headquarters by 11 A. M. the day following. Supply trains are started to arrive at battalion headquarters by dark, when foot orderlies from the different batteries conduct teams to destination.

One hundred rounds per gun are to be kept on hand at the batteries, and "though the line is over 13 miles in length and the command over 2000 strong the system works perfectly and there is no confusion"—in marked contrast it may be added, with similar situations in the Crimea and before Plevna.

The siege train took part in the "mine" explosion, details therefrom being put into position to bring a heavy vertical fire upon upon the mined redoubt and adjacent batteries.

General Hunt says: "When the order was received by Colonel Abbot to send the guns and material to the lines, it was on board ship at Broadway Landing, 7 miles distant, but the same night 16 heavy mortars with all the ammunition, etc., were in their batteries ready for service at the required moment and Colonel Abbot took immediate command of the 10-in. mortar battery during the bombardment."

Gen. Hunt in his report enumerates:

Ten 10-in. mortars.	Eighteen siege guns.
Sixteen 8-in. mortars.	Ninety-two field guns.
Twenty-eight Coehorns.	

Or a total of 164 brought to bear upon the enemy's line, all of which opened immediately after the explosion.

This mine was commenced June 25th. The main gallery was 522 feet in length and finished July 17th with lateral galleries, 37 and 38 feet in length, running under and nearly parallel to the enemy's works, completed July 23d. The charge, 8000 lbs. of powder, was put in on the 27th and sprung at 4.45 A.M. July 30th. The crater measured 135 feet in length, 97 in breadth, and was 30 feet deep.

The two left guns of Pegram's battery were thrown out in front and only 8 men out of 30 with the battery escaped alive and unhurt. Five companies of the 22d S. C. regiment were blown up and four companies of the 18th S. C. on the left were blown up or destroyed by the falling earth.

These facts are stated in the text. The mine was a complete success—the attempt to take advantage of it was a hideous and shameful failure, made so by the apparent utter lack of plan and leadership where army, corps, division and brigade commanders seemed for the most part anxious to shift responsibility and direction until it was ultimately frittered away in the ranks.

But the Siege Train did its duty—to keep down the enemy's fire and keep back his reinforcements—using for that purpose of its own armament 81 pieces and expending in 3833 rounds, 75 tons of metal.

The report states that probably for the first time spherical case from heavy mortars

was used, prepared by putting thirty 12-pound canister shot into the shell with bursting charge.

"At 11.30 P. M. July 30th," Gen. Abbot says, "I received a telegram to remove fifty-two heavy guns and mortars from position. In 27 hours these guns with ammunition, platforms, mantlets, implements, etc., complete, about 225 tons weight, were secretly withdrawn and transported about 8 miles, and in 36 hours the whole material was embarked."

In this movement were employed four artillery teams and 170 wagons and 18 eight-mule teams from the regular Siege train and the Q. M. Dept.

Gen. Butler, it appears, conceived the idea of serving the 13-inch mortar upon a railroad car and after the breaking of the first track "a second was prepared which answered admirably. It was strengthened by additional beams tied strongly by iron rods and covered by iron plating.

"The mortar was fired with 14 lbs. of powder and its recoil upon the car was less than two feet and that of the latter upon the track some ten or twelve feet."

The whole report of operations by Gen. Abbot under date of Dec. 5, 1864, is a very interesting paper illustrating the use and defects of the old artillery system as well as questions then beginning to arise relative to the new.

A portion of the siege train was detached for the Fort Fisher expedition under Gen. Terry but the infantry attack put the finish to the business and left the artillery little to do except return and resume its work in the Federal lines south of the James after some useful experience in the shipment and debarkation of heavy guns through the surf.

Of the 100-pdr. Parrott's, which were old guns when they came into Gen. Abbot's possession, some were fired from 300 to 530 rounds per piece, and of the 30-pdr. Parrott's, some from 1000 to 1400 rounds, and all without injury. In the 8-inch siege mortars from 1500 to 2000 rounds were fired with like result, but the 4½ siege guns wore badly at the vent.

The serviceable percentage of fires using Parrott, Schenkle, Dyer, Absterdam, Tice, Sawyer and Bormann fuses of time, percussion and combination varieties, runs from 90 down to 53, the latter being the Absterdam percussion and the former the paper one for Coehorn mortars.

It is noticeable that captured rebel time fuses figure at only 28 per cent. serviceable.

The siege-train batteries were particularly efficient in the recovery of Fort Stedman from that sudden and well-arranged attack of the Confederates led by the present Chairman of the U. S. Committee on Coast Defense and in this connection mention is made of the value of redoubts closed at the gorge in the scheme of defense adopted by General Duane, since the enclosed works to the right and left of Stedman fixed a limit beyond which the enemy could not extend.

The closing days of the operations round Richmond found the siege-artillery brigade distributed through some thirty batteries containing 127 siege-guns and mortars, with 73 in depot, from the 13-in. mortar and 100-pdr. Parrott's down to 12-pdr. smooth-bores.

During the entire siege there was a total expenditure of 64,000 rounds with an aggregate weight of metal of 1200 tons.

The brigade also removed 176 captured pieces of ordnance of a bewildering mixture—Parrott, Brooke, Dahlgren, Blakely, Columbiad and Coehorn, while of rifled projectiles used by the Confederates were secured 92 varieties.

Both sides were practically working out the questions involved in the changes that have since come over the spirit of the artillerist's dream.

XUM

If our civilization has been largely busied with ploughshares and reapers it has also given a good account of itself, afloat and ashore, in the service of Mars.

The wooden walls of old found their finest example in the *Constitution* whose banner floated in such triumph over decks:

> "Once red with hero's blood
> Where knelt the vanquished foe
> When winds were harrying o'er the flood
> And waves were white below,"

and it was from the encounter of the *Monitor* and *Merrimac* in Hampton Roads that the new navies were born after the *Alabama* went down under the shells of the *Kearsarge*.

The guns of the past were perfected by Dahlgren and Rodman, and the modern problems of attack and resistance are approaching their solution at Indian Head and Sandy Hook.

It was in our own harbors that the piled-up masses of brick and granite of the old system of coast defense were rendered useless, shattered in Fort Pulaski at very unorthodox ranges and in still more irreverent times. The shoulder-to-shoulder and breast-to-back tactics consecrated on many a European battle-field lost their sanctity before the provincials of Virginia on the Monongahela and the farmers that followed the redcoats from Concord and withstood them at Bunker's Hill, whilst their descendants repeated the lesson in the thickets of the Wilderness and the woods of Chickamauga. However, "no pent-up Utica contracts our powers" of accommodation, for we are quite willing to absorb the Teutonic *pickelhauben* as well as the magazine gun of the Dane—pray Heaven it be sound in its intellects and

> "Not a pipe for Fortune's finger
> To sound what stop she please."

H. W. C.

Strategie et Grande Tactique.*

In the latter part of 1892 General Pierron published the third volume of his work ("Strategie et Grand Tactique"), upon which he has been engaged for some years. These three volumes constitute a study of the lines of communications and their organization.

The one under consideration treats of: 1. The subsistence of the troops and the workings of the commissariat; 2. The supply of ammunition, and of the artillery service in the rear; 3. The engineer service in the rear; 4. Requisitions; 5. The police in rear of the army and the rôle of the *gendarmerie*.

The greater portion of the volume (347 pages out of 602) is devoted to the organization and workings of the commissariat. The immense importance of this work and the recognized authority of its distinguished author have decided me to direct attention to this volume; which every commissary, ordnance, artillery, and engineer officer should possess.

General Pierron discusses briefly, but with the greatest ability, the general principles which would affect the different methods for the supply of subsistence in the organization of the line of communications. There are ten pages devoted to this discussion and more than three hundred to quotations from nearly every known author.

**Stratégie et Grande Tactique d'après l'Expérience des dernières Guerres.* Par le General Pierron. Tome 3. Berger Levrault, Paris.

This last part of the work contains an enormous quantity of valuable documents, particularly the elaborate details of system of subsistence of the German armies in 1870-71, also a great mass of unpublished letters of the French commissaries of the first Empire; Daru, Villemanzy, Mathieu Favier, Mathieu Dumas, and also orders and letters from Napoleon and many of his marshals; and from many other general officers and commissaries. Copious extracts are made from such recent authors who have contributed to the dissemination of the knowledge of the modern methods of subsistence. The author thus relies upon the sagacity of the student and permits him to draw his own conclusions from the various documents. It would, unquestionably, have been more instructive for all students, had General Pierron himself drawn the conclusions from the documents he presents; and it is a matter of sincere regret that he did not consider it expedient to do so.

The following are the several questions of detail, under which these documents are arranged:

1. The position of the question.
2. Experience of former wars.
3. Precautionary steps to be taken previous to a war.
4. Sources of supply foreign and domestic.
5. The system of purchases with contractors.
6. When the system of requisitions can be employed.
7. The fault of the system of arbitrary requisitions.
8. Composition and weight of the rations.
9. Forced march, double rations.
10. Necessity for a varied diet.
11. Package, volume and weight of the rations.
12. Necessity of means of transport.
13. Selection of bases of supply.
14. Subsistence during the strategical deployment.
15. Rôle of the commissariat.
16. Organization of method of distribution.
17. Employment and regulation of requisitions.
18. The supply of troops by their own officers.
19. Supply of bread.
20. Supply of meat.
21. Subsistence in mountain warfare.

The general principles relating to requisitions are discussed in two pages, and then a great number of documents, bearing upon the subject, follows.

It is strange that no extracts have been taken from the following: "Les Requisitions en temps de guerre," par M. Anatole Baratier, Sous-intendant Militaire, Paris, 1873, or from "Des Requisitions Militaire étude d'administration Militaire au point de vue du droit des gens et du droits public français." Par George Ferrand, Docteur en droit, Paris, 1892.

In the 347 pages devoted to the question of subsistence, there is no extract which gives, in even the barest outline, the method of subsisting our armies during the greatest war of modern times (1861-65).

What is the reason for this omission? I answer, the simple fact that nothing has been published on the subject. The experience gained at such an enormous expenditure of life and treasure, has been almost irretrievably lost.

Would the world ever increase its fund of wisdom if each successive generation passed away without transmitting its experience to the one coming after?

We have had whole libraries on the War and a glance through any one of the

books shows that, from the author's view, war might well be described in the words of Scott:

> "Unflinching foot 'gainst foot was set,
> Unceasing blow by blow was met;
> The groans of those who fell
> Were lost amid the shriller clang,
> That from the blades and harness rang
> And in the battle yell."

which is very heroic and very pretty, but not *war*.

This important subject of the subsistence of armies is introduced by General Pierron, by the statement that, before entering upon war, the study of the region where it will take place is absolutely indispensable. Not only the general statistics of the country must be known, but also the local statistics, the fluctuations of the markets, and the annual productions of the various sections.

This work, it is needless to say, cannot be deferred until hostilities actually commence; consequently the question is pertinent—what are we doing in that line, and what information have we of the resources of our own and other countries?

Hasenkamf says: As a campaign cannot be entered upon without a plan of operations, it is also necessary to previously form a plan to provide for the supply of the army in the zone of concentration. The questions to be solved are the following:—

1. What amount of stores will the army require daily?
2. For what number of days must rations be sent into the zone of concentration?
3. Where should the magazines be established?
4. By what date should the stores be in these magazines?
5. What method of transport should be established for forwarding these stores?
6. What limit should be established for requisitions and purchases?
7. Where should the large bakeries be established?
8. Where should the abattoirs be located?
9. What are the means of transport to attach to the magazines?
10. Whence should this transport be drawn?

For the past quarter of a century we have lost sight, almost completely, of that branch of the work of a commissariat which relates to Administration, and have devoted ourselves, almost exclusively, to the accountability; an important feature no doubt in time of peace; but in time of war the mass of detail connected with it will be brushed aside, despite the piteous objections and vain remonstrances of our present Army Commanders, the Auditors and Comptrollers of the Treasury Department.

We are not so receptive that it is possible to obtain all the necessary information by induction from some unseen source. Few officers, when appointed in a Staff Department, have any great amount of reliable information of the actual work which they will have to perform, and no steps are taken to compel them to familiarize themselves with the duties. Is not a position in a Staff Department usually regarded an easy berth for some officer incapacitated for active service, or who has served a long number of years in the line? In my opinion, the reason we have not followed the proper line for a commissariat, is because we have no Staff school, where officers of the Staff Departments can, and must, learn something of their profession; and where thorough and elaborate studies of the statistics and resources of our own and other countries could be made, and plans devised for the supply of an army in any country, where we may engage in war.

XUM

Furthermore, commissary officers could be given instructions in the manner of testing and ascertaining the quality of the various stores purchased by the Department.

This school could be established by a War Department order, and an officer of each one of the Staff Departments could very profitably be sent abroad to visit the Staff schools in England, France, Germany and elsewhere, to make report upon the scope and method of instruction adopted at those schools.

With a well organized Staff school, having attached to it a number of hard working officers, thoroughly wrapped up in their profession, something might possibly be made of our Staff; although it is now the most grotesque organization on the globe. I know the old saw regarding our military policy, (as if we ever had one) and recognize the necessity of having a larger Staff than our army requires (provided all the officers are actively employed in positions where they can improve themselves); but I insist that that idea (of the necessity for a large Staff) has been unnecessarily and abnormally developed, until it has assumed the form of growth of a cabbage, with its hydrocephalus tendency; and the "line" of the army (the stalk of the cabbage) is just barely able to support the mass above it.

Let us not forget the saying of La Rochefoucauld: "En administration toutes les sottisés sont mères."

HENRY G. SHARPE,
Captain and C. S., U. S. A.

ST. LOUIS, MO., July 26, 1893.

Historical Monographs.

The Columbian celebration has been ushered in with a blare of trumpets heralding the martial deeds of the fathers and the achievements of the sons. The occasion has borne rich fruit in the numerous monographs, treating of local history—of towns and states; of military campaigns—colonial, revolutionary, Mexican and the Civi War: and of that part of history, more or less biographical in its nature, to which modern writers like Stone, Roosevelt and Rosengarten have given especial attention. The volume* before us is an admirable example of the last mentioned class.

The actual share borne by the British allies in the American war of 1776–83 has been very imperfectly understood. The word "Hessian" had become in this country a synonym for brutality and a term of reproach. Major Rosengarten, himself of German descent, has performed an important service to the Fatherland as well as to American literature by his careful translation of Captain Von Eelking's admirable *résumé* of the doings of De Heister, Donop, Knyphausen and Reidesel, as set forth in contemporaneous reports, diaries and letters.

The author remarks that "while we find in other campaigns in which German soldiers have taken part, the results gained by them more or less fully described, there is wanting in the most marked way the history of the share they took in the War of the Revolution. * * * The absence of any complete or impartial story is noteworthy in the present wealth of German history. Hitherto the archives in which the original documents were preserved have been jealously closed to the world. There is, however, abundance of other material in the journals and correspondence of the principal leaders, of officers and private soldiers, who shared in the war. Most of them wrote with no expectation that their pages would ever be made public and plainly put down what was seen and what was heard. * * * It has been the aim of the

* "The German Allied Troops in the North American War of Independence." Trans. from the German of Max von Eelking by J. G. Rosengarten. Albany, N. Y., J. Munsell's Sons, 1893.

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author to protect and restore the good name and credit of German soldiers, ruthlessly attacked on all sides for their share in the American Revolutionary War."

In doing this Captain Von Eelking has utilized thirty-eight manuscript documents never before published (1863). A supplement to the account of the military operations comprises a "List of the Officers of the Hessian Corps serving under Generals Howe, Clinton and Carleton, 1776–83," arranged by organizations. The book is a large square octavo of 360 pp., printed on heavy paper, and is indispensable to the literary equipment of historical students.

A pamphlet* from the pen of Major Rosengarten contains interesting information relative to the Historical Collection of the late George Bancroft, which would have been a valuable acquisition to the Congressional Library, but which has recently been purchased by the Lenox Library of New York. To those engaged in German-American historical research, this pamphlet will be found a valuable handbook.

T. F. R.

Artillery Circular C.†

"Electricity and its Applications in Artillery Practice," by First Lieutenant George L. Anderson, 4th U. S. Artillery, recently published by the Adjutant-General's Office, is the most valuable of the series of artillery circulars issued for the instruction of artillery gunners. Lieut. Anderson presents in a clear and lucid manner the essential elements of so much of the principles of electrical science as are necessary for practical use of the artillerist. Lieut. Anderson is particularly happy in his explanations of the subjects of electromotive force, strength of current and resistance. These are usually difficult to grasp by the beginner. By making comparisons with the flow of water he withdraws the mode of action of electrical currents from its apparently mysterious realm to one which is familiar to men in their daily experiences.

The various laws are clearly stated and their mode of application well illustrated by some simple examples. A brief statement as to storage batteries would have been desirable, as also something of simultaneous electrical ignition, as a concentrated simultaneous firing of guns will not be infrequent. The modified anemometer which is to be issued by the Signal Office evidently had not come within the cognizance of Lieut. Anderson, as he only describes the operation of the old form, which will be sooner or later withdrawn from service. A short chapter on various kinds of insulation and cables used for submarine work would have been desirable.

Circulars, such as Lieut. Anderson's, by acknowledged experts of each subject treated, will provide the material for a suitable authoritative Artillerists Manual which is much needed.

E. L. Z.

Gunnery for Non-Commissioned Officers.‡

We consider the title of this book a misnomer, for it seems more suited to the commissioned officer.

The idea of the book is to place before the reader in "as simple and comprehensive a manner as possible descriptions and explanations" of objects which are interesting and necessary to an artilleryman's education.

---

* "Sources of History," a paper read by J. G. Rosengarten, Philadelphia, 1892.

† *Artillery Circular C. Course of Instruction for Artillery Gunners. Electricity and its Applications in Artillery Practice.* By 1st Lieut. George L. Anderson, 4th Artillery, Adjutant-General's Office.

‡ *Gunnery for Non-Commissioned Officers.* By Adelbert Cronkhite, 1st Lieut. 4th Art'y. Published by John Wiley & Sons, New York.

The book consists of questions and answers. This idea, we think, is a good one, for it is far easier for the average non-commissioned officer to learn the answers to definite questions than to give comprehensive and concise answers to questions relating to something about which he has been reading. This book is divided into eleven chapters and an appendix. We will consider these separately.

Chapter I. "Explosives." This chapter is quite complete, giving short descriptions of the various kinds of powders and other explosives and the compositions of several of the best known smokeless powders.

Chapter II. "Fuses and Primers." This chapter is very properly limited to the descriptions of fuses and primers in use in our service, and has cuts of the principal ones. We notice on p. 19 a cut of I. K. powder that properly should have appeared in Chapter I.

Chapter III. "Projectiles." This chapter is not as complete as the preceding; it devotes too much space to smooth-bore and muzzle-loading projectiles, and scarcely mentions the modern breech-loading projectiles. It can hardly be considered up to date.

Chapter IV. "Artillery." This chapter makes up for the deficiencies of the preceding one, for it not only describes all of the guns which we hope soon to see issued for the use of the artillery, but also describes at length various "proposed guns" which will never be used; the space used for these latter had better have been devoted to projectiles.

There are several statements to be criticised in this chapter. On p. 45 we find stated that the object of a built-up gun is "to correct the defects of one material by uniting with it opposite qualities of the same or another material." This statement gives a very erroneous idea, for the building up of a gun makes it far stronger due to the *initial compression* obtained, this being the *object*. On p. 56 a similar error is made in describing the Rodman method of casting a gun. Rodman attempted to obtain an initial compression of the bore by cooling from the interior outward, and was partially successful.

Altogether this chapter is very good and up to date.

Chapter V. "Armor." We would have liked to have seen described in this chapter the Harveyized nickel steel armor, as this is a distinctively American armor. The other descriptions are good.

Chapter VI. "Artillery Carriages." The only thing to criticise in this chapter is the absolute lack of illustrative cuts. The chapter is very complete and up to date, but unless one is familiar with the carriages it is next to impossible to understand descriptions of the modern complicated carriages without accompanying plates. If the carriages are accessible to the reader then the descriptions would make plain the working of them. Chapter VII. "Estimating Distances"; Chapter VIII. "Sights and Sighting"; Chapter IX. "Employment of Artillery"; Chapter X. "Transportation of Artillery"; Chapter XI. "Examination and Preservation of Ordnance." These chapters are as complete as required for the present condition of our artillery.

The appendix contains Ingalls Ballistic tables; Tables of Fire, by Major Rogers; Range table for the Hotchkiss 3-inch B. L. R.; Tables of Barometrical Corrections; U. S. B. L. Cannon, 1892; Ballistics for Non Commissioned Officers, by Capt. Jas. Chester. The last is not complete enough to be of use to the commissioned officer, and the clear understanding of the subject of ballistics requires an education far beyond that of the average non-commissioned officer. We do not consider it of any advantage to attempt to teach ballistics to a non-commissioned officer; he has sufficient to learn concerning the practical working of the guns, and the ballistic problems relating to any fort should be assigned to the most capable commissioned officer.

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On the whole we consider "Gunnery for Non-Commissioned Officers" an admirably handy and complete book, containing a mass of information which can be advantageously read by any one interested in artillery.

J. C. W. B.

Hand-book of Military Signalling.*

This little hand-book, compiled by the late Capt. Albert Gallup, when signal officer of the First Brigade, N. G., N. Y., gives a good description of the various implements and instruments employed in signalling, with explanations for using them.

The manual is well arranged, the explanations are clear and concise, and the ground covered is quite all that is necessary for ordinary field service. The work has received the approval of the Chief Signal Officer U. S. A., who recommends it as the authorized hand-book for the use of the National Guard.

It has also received the approval of the Adjutant-General N. G., N. Y., and has been adopted by the State of New York as the official text-book.

Manual of Guard Duty.†

This manual, the result of the labors of a board of officers U. S. A., has received the approval of the Secretary of War, and has been "published for the government of the armies of the U. S."

Three Roads to a Commission in the U. S. Army.‡

This compact little volume prepared by Lieutenant Burnham, now military instructor at St. John's Military School, gives in clear and concise language, the rules governing the various examinations for entrance into the line of the U. S. Army taken from the official records of the War Department. These regulations are so stated that the reader will easily distinguish what is regularly prescribed from such original remarks and explanations as it has been considered pertinent to make.

The book is issued in very nice shape and type by the Appleton Publishing Company.

ARTICLES ACCEPTED FOR THE JOURNAL.

The Armies of Europe (France), By CAPT. J. J. O'CONNELL, 1st U. S. Infantry.
A Proper Field Armament, By LIEUT. W. E. BIRKHIMER, Adjt. 3d U. S. Artillery.
The Company Mess, By LIEUT. V. E. STOTTLER, R. Q. M. 10th U. S. Infantry.
Military Railway Transportation, By CAPT. FRANK WEST, 6th U. S Cavalry.
The Evolution of Cavalry, By CAPT. C. A. P. HATFIELD, 4th U. S. Cavalry.
The Use of Fieldworks in Military Operations, By LIEUT. A. L. PARMERTER, 21st U. S. Infantry.

Essays have been received in competition for the Prize Medal, signed "*Pan America*," "*Palma non sine pulvere. 25*," and "*Americanus*."

**Hand-book of Military Signalling.* By Capt. Albert Gallup, N. G., S. N. Y. D. Appleton & Co. New York.

†*Manual of Guard Duty.* D. Appleton & Co., New York. 1893. Price, 50 cents.

‡*Three Roads to a Commission in the U. S. Army.* D. Appleton. By 1st Lieutenant W. P. Burnham, 6th U. S. Infantry.

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AN APOLOGY.

In the *New York Medical Journal*, January 28th, 1893, appeared an article by William A. Hammond, entitled: "On Certain Organic Extracts, their Preparation, and Physiological and Therapeutical Effects."

While the record of this author is not one calculated to inspire respect for any opinions that might be advanced by him, yet we were led to accept fully his statements and deductions because of *quasi*-indorsement by the editor of the above named *Journal*.

Being actuated by a desire to keep abreast of the times, and without any thought or intent of injustice to anyone, we began experimentation regarding the production of so-called "Cerebrine," and other animal extracts, referred to in the foregoing paper. As a result, we were speedily convinced that their manufacture could be completed, without any detriment to the substances themselves, in a much less period of time than that claimed by Dr. Hammond; and, consequently, later we announced our ability to supply "Cerebrin."

Soon after, we were surprised to receive a letter from Dr. Hammond claiming sole proprietorship of the word "Cerebrine," which, too, had been duly trademarked, and announcing that "The Columbia Chemical Co. are alone authorized by me to handle the extracts made by my processes, and that all are made in my own laboratory, under my own supervision."

Other papers laudatory of "Animal Extracts," and presenting the same general claims, appeared in many other medical journals besides numerous lay publications—thereby demonstrating the fact that the first named article was written and published (as evidenced by Dr. Hammond's own statements) for the sole benefit of the Columbia Chemical Co., of which he (Dr. Hammond) is President and a large share-holder.

Subsequently Dr. Hammond widely disseminated through the mails and by publication in the *New England Medical Monthly* (Dr. Wile) a circular over his own signature, not only attacking us unjustly, but in a manner most scurrilous and unbecoming to an officer, a professional man or a gentleman. He also threatened us, through his attorneys in New York, with dire penalties if we did not cease the sale of the articles.

The development of the fact that the paper in the *New York Medical Journal* was written and published for *mercenary* purposes led us to doubt the statements of the author of the article, and incidentally we were induced to have the value of "Cerebrine" as manufactured by Hammond, and "Cerebrin" as made by ourselves, therapeutically and physiologically tested. As a result, we are now convinced that both "Cerebrine" (Hammond) and "Cerebrin" (P. D. & Co.) will not respond to Dr. Hammond's claims.

We, therefore, announce, that while we are prepared and willing to supply "Cerebrin," as manufactured by us after our formula, in response to all demands, that we have grave doubts as to the merits of the article, and, therefore, present our apology to the medical profession for the error into which we were unwittingly led by the *New York Medical Journal*.

We invite correspondence upon this subject, and are prepared to supply interesting information in printed form to all who will apply for the same.

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THE TWELFTH REGIMENT OF INFANTRY.

By Lieut. CHARLES W. ABBOT, Jr., Adjutant 12th U. S. Infantry.

THE numerical designation "Twelfth" has been borne by four regiments of infantry in the regular service of the United States. The first was organized July 16, 1798, under an act of same date, and disbanded June 15, 1800. The second and third were raised temporarily during hostilities, the former in 1812, its personnel being chiefly from Virginia, the latter during the Mexican War. Both performed well the duty for which intended, and upon the cessation of hostilities were disbanded.

The present regiment was organized by direction of the President in a proclamation dated May 4, 1861. An act of Congress of July 29th of the same year confirmed the organization. It was to consist of three battalions of eight companies each. The first regimental return shows that the field officers were appointed June 18th, and company officers August 23d; although the actual date of commission of all the former, and many of the latter was May 14th.

The first colonel was William B. Franklin, who was promoted from captain of Topographical Engineers. He never joined, having been appointed brigadier-general of volunteers May 17th. He was promoted to major-general July 4, 1862, and resigned his commission as colonel March 15, 1866. Daniel Butterfield of New York was the first lieutenant-colonel. He never joined, having been made brigadier-general of volunteers to date September 7th, and major-general November 29, 1862. He was promoted to colonel 5th Infantry July 1, 1863. The majors were Henry B. Clitz, Richard S. Smith, and Luther B. Bruen. Major Clitz was promoted from captain 3d Infantry. Major Smith had been 1st lieutenant 4th Artillery, resigning in 1856. Major Bruen had had no previous service.

The organization was commenced in August, Major Clitz in charge of recruiting, headquarters at Fort Hamilton, New York Harbor. The company officers were ordered on recruiting service to various places as soon as they joined. The first adjutant was Bernard P. Mimmack who was appointed 2d lieutenant from sergeant-major to date September 20th. First Lieutenant Walter S. Franklin, a brother of the colonel, was appointed quartermaster on September 30th. On October 20th the 1st battalion was organized, and the return of that month shows an aggregate of 520, the companies averaging each about 60 men. Each company had a small nucleus of old soldiers who had served one or more enlistments. The officers were as a rule young men from twenty to twenty-five, most of them perfectly green in the profession of arms. A school was established, and the strictest discipline enforced. There was much enthusiasm, and rapid progress was made.

Fort Hamilton during the latter part of 1861, and through the whole of

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1862, was the principal depot for prisoners of state who were confined in Fort Lafayette, which was included in the post. Colonel Martin Burke, a character of the old army, was commanding officer, and many amusing incidents occurred, in connection with the care and safe-keeping of his distinguished captives, which served to while away the tedium of constant drills and recitations through the long winter. There was much anxiety lest the war should be over before the regiment had a chance to show its prowess, and when spring brought marching orders to join the Army of the Potomac there was much enthusiasm and rejoicing. The first order directed a move to Perryville only, but it was changed *en route*.

On March 5th the 1st battalion, 739 strong, left New York, and reached Washington the next day. The Long Bridge was crossed on the 10th, and a bivouac made on the sacred soil of Virginia. Went into camp on 11th near Alexandria. Embarked on transport *Georgia*, 26th, for Fortress Monroe, arriving on 28th, and going into camp at Hampton. The first enemy was encountered on this voyage. He was small in size, but in point of numbers and persistency proved himself a terror.

About April 5th the battalion was at Yorktown, where the regular brigade under Brigadier-General George Sykes, the senior major of the 14th Infantry, was formed. It consisted of the 2d, 3d, 4th, 6th, 10th, 11th, 12th, 14th and 17th, and the 5th New York, the latter being Zouaves commanded by Colonel Gouverneur K. Warren, who was then captain of Topographical Engineers. General Sykes immediately began the work of perfecting his command in drill and discipline. How well he succeeded is attested by its splendid record throughout all the trying campaigns of the Army of the Potomac. It was always in condition for immediate service. Transportation and supplies were on hand. As a result extra work was often required of it.

In the fall of 1864 it had become so depleted in numbers, owing to hard service and the difficulty of obtaining recruits for the regulars, when volunteers received such high bounties, that it was withdrawn from the field. The war history of the 1st battalion 12th Infantry, indeed of the 2d also, is inseparable from that of "Sykes's Regulars," for the 2d joined the 1st in September, 1862. They remained together until so reduced in numbers that the 2d was merged into the 1st. Wherever that splendid command was engaged the 12th Infantry did its full share. The brigade organization having been effected the regulars took part in the investment of Yorktown. Building corduroy roads by day, and digging by night, kept their hands fully employed. It was generally understood that they would form the advance in the assault, so their minds were filled as well by the cheerful prospect before them. Yorktown was evacuated by the Confederates on May 8th. A slow pursuit was made up the peninsula to the banks of the Chickahominy.

There was much sickness, owing to malarial influences and a lack of knowledge on the part of both officers and men concerning the proper way to take care of themselves and prepare their food. About the middle of May the 10th New York was added to General Sykes' command, and it became a division, consisting of three brigades. The 1st, under Lieutenant-Colonel Robert C. Buchanan, 4th Infantry, was made up of the 3d and 4th,

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1st Battalion 12th, and part of the 14th. The 2d, under Lieutenant-Colonel Chapman, consisted of all the other regular regiments or parts thereof before mentioned. The 3d was composed of the volunteer regiments under Colonel Warren. The division formed part of the 5th Provisional Corps under Major-General Fitz John Porter. The battles of Williamsburg, Fair Oaks, and Seven Pines were listened to from afar.

On June 26th at Mechanicsville the regulars acted as a support. It was a day of great anxiety. The feeling was strong that a crisis was imminent. That night they slept on their arms. On the 27th at Gaines' Mills was experienced the first touch of real war. In the early morning preparations for an important movement were made all around. Everything that could not be readily carried on the wagons, or on the persons of the men was burned. Sutler's stores that were high priced the day before, were given away. In the action the division lost heavily. The 12th Infantry went into battle 470 strong. Its total loss was 212, of which 54 were killed, 102 wounded, and 56 missing. Lieutenant Charles F. Van Duzer was killed, the first casualty among the officers. Lieutenants Stacey and Coster were included in the wounded. The most serious loss was that of Major Clitz and Captain Stanhope missing. The former was reported killed, and a corporal of engineers gave full particulars of his death and burial, claiming to have put a board at the head of the grave. Although severely shot through both legs Major Clitz survived, but was captured and sent to Libby Prison. He was exchanged, and on July 18th was reported on parole. He never rejoined, and thus closed the active career, during the war, of the first virtual commander of the regiment. To him whom the brigade commander called the "gallant and dashing Clitz" was due, more than to any one else, the high standard of efficiency which was displayed by the regiment in this its first battle. General Sykes in his report writes concerning a position taken by the 12th and 14th, "while holding it they were attacked in overwhelming numbers, the 12th decimated, and Major Clitz severely, if not fatally wounded. Around his fate, still shrouded in mystery, hangs the painful apprehension that a career so noble, so soldierly, so brave has terminated on that field, whose honor he so gallantly upheld." The first clause of those thrilling words seems prophetic. In 1887, when the regiment was *en route* via the lakes from the Department of the East to Dakota, General Clitz, then retired and living in Detroit, visited and expressed the greatest interest in his old command. In October 1888 he disappeared, his "career so noble, so soldierly, so brave," ended, and his fate is "still shrouded in mystery."

From May 28th to 30th, the retreat to the James was continued. At Turkey Bend the regiment supported batteries. At Malvern Hill the whole division was engaged with unbroken success. The losses were slight, and many prisoners were taken. The 1st Brigade, with a portion of Averell's cavalry, the whole under General Averell, was formed into a rear guard on the morning of the 2d. So skilfully was this force handled that its object was fully carried out, almost without loss, and Harrison's Landing reached in safety. Here the division remained until about the middle of August.

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In a marvellously short time the *morale* of the army, which had suffered much during the seven days' fighting, was restored, and the gain in experience fully compensated for the losses in numbers. During the retreat the regiment lost all its records. This experience seems to have been the rule throughout all the active service in the field, for the retained returns, etc. now in the regimental archives, are all copies made from the originals on file in the Adjutant-General's office, when the regiment was stationed in Washington after the war was over. In August Regimental Headquarters was transferred from the 1st Battalion to Fort Hamilton. A move from Harrison's Landing to Newport News was commenced on the 14th, the latter being reached on the 18th. Embarked, 20th, on steamer *Hero*, and arrived at Acquia Creek, 21st. Marched same day to vicinity of Fredericksburg. Left, 23d, and reached Manassas Junction, 29th. The second battle of Bull Run was fought on the 30th. Position was taken in the forenoon, and held for two hours under artillery fire. Then a movement to the right was made, and the battalion was posted on the outskirts of a wood, where it was also exposed to artillery fire. When ordered to retire from this position a march to the rear was made in line of battle by battalion. This was accomplished in perfect order. Assistance being then required on the left the battalion with the 14th was sent in that direction. Here a very severe and unequal engagement was maintained for nearly an hour, when, being almost out of ammunition and greatly outnumbered, it became necessary to retire. This last movement was after sunset, and it was dark before the battalion left the field. An officer present on this day writes concerning the support given by the regulars, that they stood like a stone wall, while the rest of the army was in full retreat. No other troops could have been led to the hill where they were ordered, amid the confusion that then reigned. On reaching the top, firing was done by regiment and file with great execution. When they finally left the field, after heavy loss, they retired as steadily as though on parade. The retreat ended at Centreville, but the work of the regulars was not over. Many of the troops were so demoralized that when placed on picket duty they would stampede as soon as posted. Others refused utterly, thus entailing extra duty upon the faithful.

Early the next morning the defeated army moved towards Washington and thirty-three miles were accomplished. General McClellan met the troops near Chain Bridge, and was greeted with prolonged cheers. His reassignment to command soon after, was received with great enthusiasm. Reorganization was rapidly effected, and the *morale* of the army restored. In this fight the battalion was commanded by Captain Matthew M. Blunt, and lost 5 killed, including Captain J. G. Read, 32 wounded, and 5 missing. September 5th the 2d Battalion, consisting of Companies A, B, C, D, E and G joined the 1st, and became part of the 1st Brigade. Their movements up to this time were as follows: Early in 1862 recruiting was going on under the superintendence of Major Bruen at Fort Hamilton. On May 20th Companies A, B, E and G were organized, and left on the 24th for Washington, but their destination was changed *en route* to Harper's Ferry, which was reached on the 26th. Here they were joined to four companies of the 8th

Infantry, forming a provisional battalion, under Captain Thomas G. Pitcher of the latter.

The month of June was spent in movements about Winchester and Middletown. On July 5th, with Banks' Corps, a march was commenced from Middletown to Springville. On the third day the brigade to which the battalion belonged (Cooper's) was lost in the mountains, and wandered about from 2 A. M. until 9 P. M., when but fifty men out of four hundred were present with the colors, many having been overcome by heat and exhaustion. The records were either lost or destroyed. From Springville a move was made to the vicinity of Warrington, where the battalion did picket duty. Left Warrington on August 2d, and reached Culpeper, 6th. On the 9th at Cedar Mountain the 2d Battalion received its baptism of fire. It was deployed as skirmishers "to cover the front of the division, to advance continuously, discover the enemy's position, and annoy him as much as possible." General Prince, the brigade commander, while in captivity at Richmond, wrote the following concerning the manner in which this duty was performed. "Their part, I have occasion to know, excited the admiration of the enemy, who inquired if they were not regulars, as they had never seen such skirmishing. They were out during the whole battle, and penetrated even to the enemy's position, and annoyed him so as to turn the attention of his guns away from more distant firing with shot and shell, and caused him to waste canister upon the ground of the skirmishers." The loss of the whole battalion was 8 killed, 37 wounded, including 6 officers, among whom was Captain Pitcher; and 1 officer, 14 men missing; in all 60, showing that the praise of the brigade commander was dearly bought.

After this battle a gradual movement was made in the direction of Manassas, which was reached on the 22d. There Company D joined, 26th. On September 1st Company C arrived and the battalion was ordered on picket near Bull Run. Fell back, 2d, towards Fairfax, and were near General Kearney in his action at Chantilly, but were not ordered into the fight. Retreated with Banks' Corps to Alexandria, crossing the Potomac and camping near Tenallytown, Maryland, 4th. On 5th, recrossed the river, and as before stated, joined the 1st Battalion. Captain Thomas M. Anderson succeeded Captain Pitcher when the latter was wounded at Cedar Mountain, and was in command when the battalions joined. Company F was organized on the 10th, and performed garrison duty at Fort Hamilton. Camp at Tenallytown was broken on the 9th, and the battalions, commanded respectively by Captains Blunt and Anderson, advanced through Rockville to Frederick, thence to Middletown, where bivouac was made on the 14th. Crossed South Mountain, 15th, to Porterstown, forming part of the advance. There was some harmless artillery fire in the evening. During the first part of the 16th the enemy's artillery was somewhat annoying. At 5 P. M. the 1st Battalion was ordered to relieve the 4th Infantry in guarding the Antietam Creek bridge. This position was held until about noon of the 17th, when a force of cavalry and horse artillery was crossed. This drew a heavy fire from the enemy's artillery. The fire of sharpshooters being annoying to Tidball's battery, a skirmish line was thrown out under

Captain Frederick Winthrop, which soon drove them back. Shortly after the battalion was advanced in support of the battery. About 7 P. M. orders were received to join the brigade. The loss was 1 killed, and 3 wounded. The 2d Battalion was held in reserve during the entire action, and suffered no loss. General Alfred Pleasanton, commanding the cavalry division, spoke in high terms of the services rendered by the regular battalions in supporting his horse artillery. Camp was made near Sharpsburg, 23d. For the rest of the month and during October, guard duty was performed at the fords crossing the Potomac. Left Sharpsburg, 30th, for Harper's Ferry. During November a move was made by slow degrees to the vicinity of Falmouth, which was reached on the 22d. The only incident worthy of mention was a review by General McClellan on the 10th, preparatory to his relinquishing command of the army.

Remained in camp near Falmouth until December 11th, when a move was made nearer the town, and on the afternoon of the 13th the river was crossed, and position in reserve taken on the outskirts of Fredericksburg. From this time until the morning of the 16th the battalions occupied various positions in and about the city. All day long on the 14th they lay under a galling fire, unable to return it, a most trying test of discipline and courage. On the 15th they built barricades, and dug rifle pits. The next day they formed part of the rear guard, covering the crossing of the army. The skirmishers of the 1st Battalion, together with those of the 3d Infantry, all under Captain Winthrop, brought up the extreme rear, and were the last to cross. The total loss in both battalions was 13. Returned to old camp 17th, and remained during the rest of the month, and until January 19, 1863, when camp was broken. The next five days were spent on the "mud march," Burnside's unfortunate and fruitless attempt to cross the Rappahannock River, and advance, to retrieve the disaster at Fredericksburg. Again the old camp was sought, and preparations made to spend the rest of the winter. Regimental Headquarters joined February 13th.

On March 9th, pursuant to orders from the War Department, Companies E, F and H, 1st, and B, E and G, 2d Battalion, were broken up, and the men distributed among the other organizations. There were left in the 1st Battalion Companies A, B, C, D and G; aggregate present and absent 480, Captain Blunt commanding. The 2d consisted of Companies A, C and D in the field, F and H at Fort Hamilton; aggregate, 524, Captain Anderson in command. The two companies at Hamilton aggregated 185, leaving eight, about 820 strong, in the field. There were actually present, however, only about 600 officers and men, so large was the list of absentees, sick or on detached service. Major Smith commanded the regiment. Lieutenant Mimmack was still adjutant. The position of quartermaster was filled April 9th by the appointment of 1st Lieutenant Robert L. Burnett, Lieutenant Franklin having resigned the same on February 9th. The time during this winter camp was spent both profitably and pleasantly. Picket duty, guard and fatigue, interspersed with drills, recitations and paper work, were done carefully and diligently, for Colonel Buchanan was somewhat of a martinet, and had very decided ideas of what regulars should be. On the

other hand there was much jovial good fellowship, and the opportunities to become well acquainted were improved to the utmost.

The active campaigning of the year commenced in the latter part of April. General Hooker was in command of the army, and General Romeyn B. Ayres had relieved Colonel Buchanan as brigade commander. The operations about Chancellorsville lasted ten days, from April 27th to May 6th. There were many wearisome and harassing marches, taxing the energies of the troops to the utmost. The regulars had but little chance, although willing and eager to fight.

On May 1st there was an encounter on the Fredericksburg Pike. The regiment was in line of battle on one side of the road. Skirmishers from the 2d Brigade were in advance. The enemy, when met, was driven about a mile. On the 3d some good work was done in covering the 11th Corps. On the evening preceding the retreat a division picket was formed of officers and men, specially selected, without regard to roster, for the purpose of covering the retiring troops. A captain of the regiment was placed in command. An eye witness wrote as follows: "The woods were on fire throughout the length of the picket line, and when night fell, soon after the sentinels were posted, the burning branches and falling limbs made the scene almost appalling; at intervals the enemy would approach our line and fire at random; nobody was hurt, but a more agreeable way of passing the night can easily be imagined. Before dawn the picket was quietly withdrawn, and followed the remainder of the army across the river." The regiment lost 23 men during these operations. Camp near Falmouth was resumed, and retained about a month, when the regiment moved to Banks' Ford, and did picket duty until June 14th.

The march to Gettysburg was made via Manassas, Aldie Gap, Monocacy, Frederick and Union Mills, which was reached on the 30th. July 1st, left Union Mills and passed through Hanover, Pa., to the vicinity of Gettysburg. About five P. M., 2d, the division went into action, and remained under fire for nearly three hours. The battalions were engaged a good part of the time in changing positions, all of which was done in perfect order, although suffering heavy loss. General Ayres commends the gallantry of the division on that occasion, stating that although the casualties were terrible (fifty per cent.) no one thought of retiring until the order was given. The position taken on the evening of the 2d, was held until the morning of the 4th, when the brigade made a reconnaissance. Company B, Captain Winthrop, was sent skirmishing, and performed this duty in such a manner as to win the praise of the brigade commander. The entire loss in these operations was 92, one officer, Lieut. Silas A. Miller, being killed, and four wounded. Captain Thomas S. Dunn was in command. Major Smith having resigned, May 30th, Major Dickinson Woodruff succeeded him in the 2d Battalion, but did not join until October 5th, when he assumed charge of the regimental recruiting. Lieut.-Col. Butterfield was promoted colonel 5th Infantry on July 1st, and was succeeded by Lieut.-Col. Christopher C. Augur. Col. Augur had been appointed brigadier-general of volunteers in 1861, and major-general the next year, and his service during the entire war was with the volunteers.

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July 5th the pursuit of Lee began. The march was through Emmittsburg, over South Mountain and Antietam Creek to Williamsport. Here four days, 11th to 14th, were spent in manœuvring, when the enemy escaped across the Potomac. He was followed on the 17th, and the advance was continued nearly every day until on the last of the month camp was made at Beverly Ford, Va. During this month the companies at headquarters, F and H, 2d Battalion, saw their first actual service, being engaged from 13th to 20th in suppressing the draft riots in New York City. General Wool reports that on the 16th, Company F, Captain Putnam, was ordered to Gramercy Park to support some cavalry. Upon arriving there the mob opened fire, whereupon the adjacent buildings were entered, and the rioters killed, arrested or driven out. They were pursued in all directions and dispersed. After this spirited action they did not again assemble.

From Beverly Ford the battalions moved to Bealton Station, thence to Alexandria, where they were embarked August 16th, on transport *Planet* for New York, to which place the brigade was sent to prevent a recurrence of the draft troubles. Arrived 19th, and camped at Tompkins Square, remaining until September 17th, doing guard duty at the provost-marshal's office, Police headquarters. Major Bruen was relieved as superintendent of the regimental recruiting service, and assumed command August 23d. Sailed September 19th, on transport *Battie*, for Alexandria, arriving on 21st. Took cars to Culpeper next day, and remained in camp there until October 10th. Companies F and H, 2d Battalion, sailed from New York on steamer *Atlantic*, 18th, escorting deserters and conscripts to Alexandria. Left there for Culpeper and joined regiment on 22d. From this time until late in December the battalions marched back and forth with the corps along the line of the Alexandria and Orange railroad during all the operations which resulted in actions at Bristow and Rappahannock stations, and Mine Run. In the former, October 14th, they supported the 2d, and at Rappahannock Station, November 14th, the 6th Corps, losing on that occasion four men missing. At Mine Run, November 27th, they were in line of battle under artillery fire, and one officer and six men were missing. On December 27th camp was made at Kettle Run, and the end of the year found them guarding the railroad. In the meantime Company H, 1st Battalion, was reorganized, and remained in garrison at Fort Hamilton. Major Clitz was promoted lieutenant-colonel 4th Infantry, November 4th. Major Henry E. Maynadier succeeded him, but did not join, being on detached service as a member of the Hospital Inspection Board of Michigan. Lieut. Burnett resigned as quartermaster on November 19th, and was succeeded by 1st Lieut. Evan Miles.

The monotony of the winter camp was enlivened by numerous small affairs with guerrillas, whose constant aim was to cripple the railroad by burning bridges or tearing up the tracks. Major Bruen was brigade commander until early in spring, and Captains Stanhope and Alexander J. Dallas commanded the regiment at different times. Camp was broken on April 30th, the band having left on 26th to join Company H, 1st, at Fort Hamilton. The total number present was about 450, officers and men, Major Bruen commanding. The regiment was in the 1st Brigade (Ayres'), 1st Division (Grif-

fin's), 5th Corps (Warren's). The forward movement was through Bealton Station, across the Rappahannock and Rapidan, thence along the Orange and Alexandria turnpike, until the morning of May 5th, when the skirmishers of Ewell's Corps were engaged near the old Wilderness tavern. About noon an advance was made in line of battle, the regiment being in the front on the extreme right, through a dense undergrowth in a forest of large trees, until the enemy's main line was sighted, when fire was opened. As the 6th Corps was supposed to be on the right within supporting distance, the presence of troops in that direction excited no remark until it was discovered that a division of the enemy, Johnson's of Ewell's Corps, had completely enveloped that flank. Retreat was made in confusion, only one company, C, 2d Battalion, Captain C. L. King, preserving good order, but all were soon rallied. The enemy made no further advance that day. The official loss, killed, wounded and missing, was 110, but it is believed to have been greater. Lieutenant Jean P. Wagner was mortally wounded, and Captain Henry C. Morgan lost a leg. On the 6th, log breastworks were thrown up, and some skirmishers advanced, who engaged those of the enemy. On the 7th, in company with the 2d and 14th Infantry, a reconnaissance was made. The enemy's main line was discovered in an entrenched position. Earthworks were thrown up in front, and skirmishers sent forward. An advance by the enemy necessitated an extension of the works on the flanks, but when night came the whole force was withdrawn, and at midnight a strong position taken near a battery. The next day it was found that the army had moved towards Spottsylvania, whereupon an advance was made in that direction, and that evening the brigade went out on picket.

The next three days were spent behind breastworks, more or less under fire. On the 12th, the division moved forward to attack the enemy's works. When 200 yards distant, the troops on both flanks gave way, leaving the regiment in a small wood, which it held for two hours under heavy fire, when it was withdrawn to the main line. The loss was not very great owing to the protection afforded by the trees. The next day was spent in moving from place to place, acting as a support, rejoining the brigade and marching with it to Spottsylvania Court House in the evening. The brigade was ordered on the 14th to make a charge and retake a hill from which a brigade of the 6th Corps had been driven. This was done successfully through a dense wood, the line being maintained in remarkable order. On the 15th the regiment went out by companies on the division skirmish line, and was under a hot fire, causing much loss. Rejoined the brigade, 16th, and began building log breastworks, under a heavy cannonade by which Major Bruen was mortally wounded. Captain Winthrop, who had been acting as inspector-general of the brigade, then took command. The next four days were spent behind the breastworks, most of the time under fire. The losses from the 8th to 20th were 65 killed, wounded and missing. Crossed the Po River on the 21st, and advanced towards the North Anna, which was forded about 3 P. M., 23d. Later in the afternoon a vigorous attack was made by Hill's Corps. The regiment at the beginning was in the second line, but as the loss began to be heavy, Captain Winthrop asked to be allowed to move forward, which was permitted, and a very rapid fire opened. In half an hour Hill was repulsed with

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severe loss. The next day was spent in burying the enemy's dead and breaking up the Virginia Central railroad. 25th, moved down the river and skirmished with Hill's Corps, remaining in this position until evening of the 26th, when a crossing was made, followed by an all-night march in a heavy rain.

This march was continued south over the Pamunky and Tolopotomoy, with frequent skirmishing, until the 31st, when Bethesda Church was reached, and the division threw up two lines of entrenchments, the regiment being posted in the first. There was more or less skirmishing that day and June 1st. The losses from May 22d to this time were 15 killed, wounded, and missing. On June 2d the regiment occupied the extreme right of the corps which, with the 9th, was ordered to proceed to the left. The 9th Corps moved away, thus leaving the right uncovered, whereupon the enemy attacked with his skirmishers, followed by long lines of battle, extending far beyond the exposed flank. There was some firing when the regiment was faced about and moved to the rear, with the intention of occupying the second line. By the time that line was reached the enemy was close behind in overwhelming numbers. The next three-quarters of a mile was passed over at a remarkable rate, until a clearing was reached, and a rally made, when the enemy was repulsed. The next forenoon the corps acted as support of an attack by the 2d, 6th, and 10th Corps, and in the afternoon the brigade repulsed a forward movement of the enemy, north of the Mechanicsville road. Position in the trenches was occupied the next three days. 6th, Company H, 1st, about 80 strong, joined from Fort Hamilton, having left there May 10th, and been detained at Belle Plains. The losses since the 1st were 53 killed, wounded and missing. 7th, moved to a fortified position at Sumner's Bridge on the Chickahominy, and remained until the 11th, when a movement began towards Petersburg. The Chickahominy and James were crossed, and on the 18th, near Jerusalem plank road, the regiment was engaged in an attack on General Beauregard's lines in front of the city. A mile was advanced in the face of heavy cannonading, and entrenchments thrown up, which were occupied until the 28th under constant fire from artillery and sharpshooters.

Major Bruen died at Washington on the 21st, from the wound received at Laurel Hill. The end of the month saw the regiment in camp before Petersburg, where it remained until July 30th, when the corps was ordered out to assist the 9th in the attack after the mine explosion. This being a failure, the camp was resumed, and retained until August 18th. On August 6th, Companies A, C, D, F and H, 2d Battalion, were disbanded and the men transferred to the 1st, in which Companies E and F were reorganized. On the 18th the regiment, Captain Stanhope in command, moved with the division to Globe Tavern near the Weldon railroad, and assisted in repulsing Heth's Division of Hill's Corps. The next morning the enemy attacked, broke through and almost enveloped the right, capturing a large part of the division, and causing severe loss in killed and wounded. Captain S. S. Newberry was among the killed. That afternoon the ground lost in the morning was retaken, reinforcements having been received from the 9th Corps. 20th, were withdrawn to a strong position with artillery, and the

next day repulsed an attack. The regiment had 48 men present, Lieutenant Miles being the senior officer. This position was held until September 30th. A movement about two miles to the left on the Squirrel Level road then took place, camp was made, and retained until October 1st, when there was a spirited engagement in which the enemy was repulsed, and 1st Lieutenant T. D. Urmston killed. 2d, camped at Poplar Grove Church, and remained until the 27th, when a reconnaissance was made. Returned to camp next day. On November 2d left for City Point, and embarked 3d for Fort Monroe, thence to New York, via Norfolk, arriving 6th.

Thus ended the active service of the regiment during the war. The statistics of losses during that period show that of all the regular regiments the 12th stands fourth in the total of deaths including killed, died of wounds, disease, or in prison. The number that died in prison, 77, exceeds that in any other regular regiment, and indeed is one of the largest in the entire army. The greatest loss in any one battle was at Gaines' Mills, the first important engagement. In the number of killed the regiment stands three in that action, and in killed, wounded, and missing, six. It is believed, however, that it was smaller in point of numbers than any regiment whose loss was greater, all the others being volunteers.

On arriving at New York, regimental and 2d Battalion headquarters were established at Fort Hamilton, Major Woodruff commanding. 1st Battalion took cars for Elmira, N. Y., arriving there November 7th. The duty to be performed at Elmira was guarding prisoners of war. The battalion numbered about 230 officers and men, and was commanded by Major Maynadier. Lieutenant Mimmack resigned as regimental adjutant on January 30, 1865, and 1st Lieutenant James E. Putnam was appointed in his stead. Lieutenant Miles resigned the position of regimental quartermaster February 5th and was succeeded by 1st Lieutenant Emerson H. Discum. Major Maynadier left Elmira on detached service in January, and from that time on, several of the captains were successively in command.

The battalion was gradually increased by the arrival of recruits, and in July, numbered 400, when orders came for a transfer to Camp Winder, near Richmond, Va. In September a change was made to Camp Winthrop. The reorganization of the 2d Battalion commenced the same month at Fort Hamilton. Lieutenant Discum was relieved as R. Q. M. October 14th, by 1st Lieutenant Edgar C. Bowen. As soon as the companies of the 2d Battalion were filled, they were sent to join the 1st, and the end of 1865 saw the 2d at Winthrop, fully reorganized, numbering over 500, Captain Anderson in command. The 1st was smaller. Five companies were at Winthrop under Captain Richard C. Parker, two at Yorktown, and one at Fort Magruder. A beginning had been made of the 3d Battalion at headquarters, and two companies had a few men to account for.

In January 1866, the companies of the 1st at Winthrop were sent to Fort Monroe, where they were joined by those at Yorktown. Thence battalion headquarters and Companies B and D went to Williamsburg, C to Camp Hamilton, and H to Norfolk. The latter was joined by F from Camp Magruder. The 1st Battalion remained in this vicinity until August, when all the companies were collected at Camp Augur, Washington.

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Companies B, D, E, F, G and H, 2d, were changed in January from Winthrop to Petersburg. The 2d Battalion continued about Petersburg until the consolidation in December, Major Woodruff joining in November. Companies A and B, 3d, joined at Richmond in January, leaving C and D organizing at headquarters. In March, companies A, B, C and D under Captain Morgan changed from Richmond to Washington, and were there joined by F company, E being in process of organization at Hamilton. By July the entire battalion, numbering over 570, was in Washington at Russell Barracks, where regimental headquarters had been moved in June, Lieutenant-Colonel Wallace in command.

In February fourteen second lieutenants were appointed to fill vacancies. Almost all had held commissions in various grades in the volunteers. In March, General Franklin's resignation promoted General Augur to be colonel, and Major George W. Wallace succeeded the latter as lieutenant-colonel. The return for April shows aggregate in the regiment, 1723. On August 4th, Lieutenant Bowen resigned as R. Q. M., and was succeeded by 1st Lieutenant Edward Hunter, to date 11th. Lieutenant Putnam resigned the adjutancy on the 18th, and it remained vacant. Early in November Companies I and K 1st, 2d, and 3d Battalion joined at regimental headquarters from Davids' Island, via Fort McHenry, Baltimore, at which place they were supplied with arms and accoutrements. Companies I and K 2d, left on the 20th for Petersburg. The return for that month shows the highest aggregate, 1883.

On December 7th, pursuant to G. O. No. 92, A. G. O., dated November 23d, the regiment was divided into three, as follows: 1st Battalion remained the 12th, 2d became 21st, and 3d the 30th Infantry. Headquarters were then moved from Russell Barracks to Camp Augur, Lieutenant-Colonel Wallace in command. Majors Woodruff and Dodge were assigned to the 21st. and 30th respectively, dating from September 21st. 2d Lieutenant David J. Craigie was appointed adjutant to date December 1st. The aggregate for that month was 586. The company officers remaining were as follows: Captains H. R. Rathbone, P. W. Stanhope, W. J. L. Nicodemus, B. R. Perkins, R. C. Parker, M. H. Stacey, H. C. Egbert, R. H. Pond and A. G. Tassin; 1st Lieutenants A. Thiemann, J. E. Putnam, J. H. May, J. L. Rathbone, E. Hunter, C. S. Luipler, A. B. Mac Gowan, and J. L. Viven; 2d Lieutenants W. E. Dove, A. M. Trolinger, D. W. Applegate, S. L. Hammon, L. Nolen, D. J. Craigie, W. A. Coulter, W. W. Deane and R. C. Breyfogle. During the whole of 1867 the regiment remained in and about Washington doing garrison duty. Company A went to Phillippi, West Va., in October, returning in November.

On January 18, 1868, Companies B, C, F and K, under Major Maynadier, proceeded by rail to South Carolina where stations were taken at Darlington, Georgetown and Beaufort. Afterwards Charleston and Summerville, S. C., Montgomery, Ala., and Fort Pulaski and Savannah, Ga., were occupied, and at the latter place on December 3d Major Maynadier died. The duties performed in this locality during the reconstruction period were of a very trying and delicate nature, requiring as they did a combination of good sense, courage and forbearance. In the meantime various outposts

about Washington were occupied from time to time by companies or detachments, and Company H went to Fairmount, W. Va., in October, returning in November. Headquarters were changed that month from Russell to Lincoln Barracks. There were some changes of station among the companies in the South during the early part of 1869, and in March all were collected in Washington. Lieutenant Hunter resigned as R. Q. M. March 1st and his place was filled by 1st Lieutenant Viven. Colonel Augur was promoted to brigadier-general to date March 4th, and was succeeded by Colonel Orlando B. Wilcox, 15th, while Major Henry R. Mizner was assigned *vice* Maynadier, same date. The regiment was not affected by the reorganization made that year.

On April 8th Headquarters and Companies A, E, G and I left Washington by rail for Omaha, and proceeded thence by the Union Pacific railroad to the end of its track. A march of 45 miles was made to the terminus of the Central Pacific railroad, where cars were taken to San Francisco, Company I being detached at Humboldt Wells to take station at Camp Halleck, Nev. The other three companies arrived at Angel Island, via San Francisco, on the 29th. Companies B, C. D, F, H and K, under Lieutenant-Colonel Wallace, left Washington, 10th, and proceeded west by the same route as that taken by the first detachment. Company C disembarked at Reno, and H at Wadsworth, to take station at Camp Bidwell, and Churchill Barracks, Nev., respectively. The other four companies reached Angel Island May 6th. Headquarters and Company G remained there. The other companies proceeded to posts as follows: A, Camp Wright; B, Camp Independence; D, Fort Yuma; E and K, Camp Gaston, Cal., and F, Fort Whipple, Ariz. H changed from its first location at Churchill Barracks to Fort Mohave, Ariz., leaving a detachment at Camp Cody, Cal., and G was soon moved from headquarters to Camp Colorado, Ariz.

The regiment was thus scattered over three states or territories, occupying eleven different posts. The two most remote stations were nearly 700 miles apart, as the crow flies, and owing to the meagre facilities for transportation it took at least six weeks to go from one to the other. Lieutenant Craigie resigned as adjutant October 31st, and was succeeded by Lieutenant Hunter, November 1st. The latter was transfered to the 1st Cavalry February 19, 1870, leaving the adjutancy vacant until May 13th, when 1st Lieutenant Thomas F. Wright was appointed. He was placed upon the unassigned list June 9th, again leaving a vacancy until February 7, 1871, when 1st Lieutenant John M. Norvell succeeded to the position. Lieutenant-Colonel Anderson D. Nelson, 6th Infantry, was transferred, *vice* Wallace retired, December 15, 1870. Lieutenant Viven resigned as R. Q. M. February 28, 1871, and Lieutenant Craigie succeeded him, to date March 1st.

Various changes of station occurred among the companies during the years 1870, 1871 and 1872. Camp Hall, Idaho, was the most northern point occupied, Company C moving there from Bidwell in April, 1870. Company F was posted in various places in Arizona, such as Camps Aqua Frea, Ben Richards, and Beale Springs. The isolated posts were almost all at or near Indian agencies, which involved more or less work inspecting supplies, etc. The routine of drill, signalling, and a primitive sort of target practice was

relieved by occasional scouts, and hunting trips. Headquarters was a receiving station for recruits, who were held there until transportation could be furnished to their posts, and for months at a time the garrison consisted only of the band, a few men on detached service from their companies and the aforesaid recruits. Its proximity to San Francisco made its social attractions very great. Lieutenant Norvell resigned as adjutant, January 17, 1873. Later in the same month, Company E, with Lieutenants Wright and George W. Kingsbury, was sent to operate against the Modocs in the Lava Bed country. Company G, Lieutenant Charles P. Eagan, joined it in February. Both companies were ordered out after the massacre of General E. R. S. Canby and the Peace Commissioners on April 11th. On the 15th, 16th and 17th there was a general engagement with severe fighting in which Lieutenant Eagan and 2 privates were wounded, and a corporal killed, all of Company G. 26th, Company E with two batteries of the 4th Artillery was engaged with terrible loss, 4 officers and 18 men being killed, 2 officers and 16 men wounded. Lieutenant Wright and three men were among the former, and 4 men, the latter.

From this time the companies were continually scouting until late in May, when the Modocs surrendered and were escorted to Fort Klamath, Oregon, arriving there June 10th. Lieutenant Kingsbury was placed in charge of the prisoners, and afterwards detailed as a member of the military commission which met to try them on July 1st. Captain Jack, the chief, and three others were sentenced to be hung, and the execution took place October 3d, Companies E and G being present. The latter formed part of the guard which took the remainder of the prisoners east, immediately after, while the former returned to Camp Gaston on the 28th. Second Lieutenant George S. Wilson was appointed adjutant June 12, 1873, and resigned the position February 20, 1875, being succeeded by 2d Lieutenant William D. Geary. In September, 1875, Companies C, G, F and I were ordered from Angel Island to southeastern Nevada to operate against hostile Indians. There was nothing but a little marching, and the next month all returned to their stations, C to Yuma, G, Bidwell, F and I, Angel Island. Lieutenant Craigie resigned as R. Q. M. January 31, 1876, and was succeeded by Lieutenant Kingsbury, February 1st. On May 14, 1877, a mutual transfer was made by which Major Mizner went to the 8th Infantry and Major Thomas S. Dunn, who had been one of the war captains, returned to the regiment.

In the summer of this year the Nez Percé Indian outbreak occurred, and Companies B, C, D, F and I were ordered from their respective stations to the scene of hostilities, northern and central Idaho. Companies D and I went to and remained at Lewiston, Idaho, and Camp McDermit, Nev. respectively. B and F, together with A, 21st Infantry, all under Captain Egbert, having arrived at Boise, Idaho, in July, were there designated as part of the reserve column under Major John Green, 1st Cavalry. The battalion left Boise on the 14th, joining Major Green at Little Salmon Meadows, ten days later, and spent the remainder of the month marching, reaching Crossdale's Ranch on the 31st. Thence Company B went to Kamai Agency, and F to camp at Mount Idaho. Late in September the two com-

panies joined, and returned to Angel Island. Company C, Captain Viven, with H, 8th Infantry, left Fort Yuma, July 8th, and proceeded via Los Angeles, San Francisco, and Portland to Lewiston, arriving 17th. It numbered 13 men, but was reinforced at San Francisco by a number of cavalry recruits, who continued with it during the entire campaign. From Lewiston the company marched to Lawyer's Cañon, arrived 22d, joined General O. O. Howard's command, and remained with it during the long pursuit of the Nez Percés from the Clearwater, across the Yellowstone, where there was a skirmish in which the cavalry only were engaged, to the Missouri, arriving October 1st. Thence on the 14th with H, 8th, and four batteries of the 4th Artillery, went from Little Rocky Creek to Little Rocky Mountains, and towards Bear Paw, but were stopped *en route*, for the hostiles were defeated at that place by the troops under Colonel N. A. Miles, 5th Infantry. Returned to Little Rocky Creek, and thence on Steamer *Benton* proceeded to Omaha. Left there by rail, and arrived at Angel Island, November 8th. The company marched and travelled during this campaign 7194 miles.

In March of 1878 headquarters moved from Angel Island to Whipple Barracks, General Willcox having been placed in command of the Department of Arizona. The next month Company A joined at Whipple from Mohave. Major Dunn was retired June 29th. The Bannock outbreak took place this summer, and called into the field Companies B and K from Benicia Barracks, Cal., and C, D and F from Angel Island, all under Captain Egbert, and numbering 13 officers, 180 men. The battalion proceeded by the Central Pacific railroad to Carlin, Nev., and there debarked June 11th, thence to divide of Humboldt Mountains, where orders were received from General Howard to move with care as he expected to drive the hostiles in that direction. 14th, in compliance with instructions the officers were mounted, and wagons hired for the men, in order that movements might be as rapid as possible. As a result many of the marches were from 30 to 40 miles a day, thus showing the capabilities of infantry mounted on wheels in a country where the roads were suitable. 17th, crossed into Idaho, and at the end of the month the battalion was at old Camp Lyon, where instructions were received to be in readiness to move rapidly in any direction. Thence ordered to Boise, arriving July 2d and leaving 5th. The hostiles having been driven toward Powder River Valley, which was well settled, it became imperative to move there and make dispositions, which was done so well that the valley was saved from devastation. Company C under Captain Viven was sent to the head waters of Clover Creek on a scout, and at Ladd's Cañon on the 12th prevented a party from crossing, capturing 21. The battalion was then sent to head off the hostiles should they reach Snake River. Crossed the river 16th, and moved towards head of Main Weiser River, thence over Little Salmon River to camp on Goose Creek, being obliged to build roads in many places, through forests, over hills and down cañons. From there detachments were sent out to watch all the trails.

Word having been received that the hostiles had abandoned all attempts in that direction, the command was ordered back, and gradually made its

way to the Snake River, where it was divided, Companies F and K remaining at Rhinhart's crossing, the others patrolling up the west bank to Henderson's Crossing on the Owyhee, arriving 29th. There on August 1st a concentration was made, reports having been received that the hostiles were in the vicinity. Scouting along the river was continued until the 9th, when it was reported that the hostiles were trying to cross. Three detachments were made, two mounted, one in wagons, crossed at Glenn's Ferry, and sent down the river. One, under Captain Dove, found a strong party entrenched at Bennett's Creek. A spirited attack was made and returned, and one man was wounded. Night came on and stopped the fighting. A courier was sent to Captain Egbert, who hastened to the scene with all the available men. The hostiles escaped in the darkness, and were followed the next morning, but as orders had been received to proceed to Cold Spring depot the pursuit was abandoned. The detachments were called in, and the march began to Cold Spring. Left there 18th for Kelton on the Central Pacific, arriving 25th, thence to Angel Island.

Shortly after the return of the battalion from the field a general movement towards Arizona commenced, and by October the companies were distributed as follows: B and K, Camp Verde; C and D, Camp Apache; E, Camp Supply; F, Whipple Barracks; G, Camp McDowell; H, Camp Thomas, and I, Camp Grant. Then followed almost four years' service of nearly the same nature as that at the preceding station. During the entire period the companies were quite as much scattered about, although the distances separating them were not as great. There was considerable post constructing and road building. The restless Apaches required constant watching. For this purpose four Indian companies were maintained, and much scouting done. These companies were commanded by young officers, the regiment being represented in this capacity at various times by Lieutenants Wilson, F. Von Schrader, Guy Howard, S. C. Mills and F. J. A. Darr. Lieutenant Geary resigned the adjutancy November 17, 1878, and was succeeded by 1st Lieutenant F. A. Smith. Major M. A. Cochran was assigned to the regiment March 4, 1879. Lieutenant-Colonel Nelson retired June 7th same year, Major R. S. La Motte being promoted to his vacancy. Lieutenant Kingsbury's resignation as R. Q. M. July 1st, resulted in the appointment of 1st Lieutenant W. W. Wotherspoon to that position.

The first serious outbreak of Indians occurred August 30, 1881, at Cibicu Creek, near Fort Apache, where the Indian scouts turned upon Col. E. A. Carr's command of the 6th Cavalry, which had gone out to suppress trouble caused by a medicine man. Company D formed part of the garrison, and a detachment was engaged next day at a ferry near the post. On September 1 the whole company took part in the defense of the post. This led to a general concentration in the vicinity of the San Carlos Agency and along the Gila River. Company H went into the field from Yuma, C, from Thomas, F, partially mounted from Whipple, and K, under 1st Lieut. J. H. Hurst made a wonderful march from Fort Huachuca to Grant, the details of which are as follows: At 10 A. M. September 4 orders were received to take the field, and at 12.30 P. M. the company left the post, 31

strong, having for transportation one old cavalry horse, four broken down mules, one very lame, and a wagon the wheels of which did not track. At 7 P. M. went into bivouac 22 miles out. At this place such alarming news was received that it was deemed best to push on, and at 9 P. M., in the midst of a terrific storm that lasted twenty hours, the company started on a march that continued until 2 A. M. of the 6th, when a point known as the Horse Ranch, nine miles from Grant, was reached. Nearly all the first night the route lay along a cañon, which, ordinarily dry, had been turned by the storm into a raging torrent up to the men's knees. At three different times it seemed necessary to abandon the wagon, but it was finally pulled through. After a four hours' rest at the ranch the march was resumed to Grant, which was reached a little after 9 A. M. Every man was present, and on his feet. The distance was 100 miles, time 44½ hours, certainly a wonderful exhibition of pluck and endurance.

None of the companies in the field were engaged in any action, and by December all had returned to their posts. During the spring and summer of 1882 there was more trouble, which called at various times Company E from Grant, G from McDowell, H from Fort Lowell, K from Huachuca, D from Apache, and F from Whipple. With the exception of Company E, which continued at Camp Price, at the southern end of the San Simon valley until August, none remained long in the field, nor were there any encounters with the hostiles.

In September came the welcome order for a new station, first to Fort D. A. Russell, Wyoming, but almost at the last moment it was changed to the Department of the East. The companies were concentrated at various places on the railroad, and went east in two detachments, Headquarters, and Companies A, B, C, D, F and G taking station at Madison Barracks, E and K, Fort Niagara, and H and I, Plattsburgh Barracks, all in New York. This change, after so many years on the Pacific coast and in the southwest, was very agreeable. Greater concentration and better facilities for travel allowed more intercourse. The older members of the regiment thus had the opportunity to recall old times, and the younger to become acquainted. Such military exercises as parade and battalion drill, which had been almost unknown since the regiment left Washington, were taken up with zeal, and had almost the charm of novelty. Five years were thus spent very pleasantly with but few changes, the most important being as follows: Major Cochran was promoted to lieutenant-colonel 5th Infantry, May 31, 1883, and Captain W. H. Penrose, 3d Infantry, took his place, with station at Fort Niagara. In May, 1884, Fort Ontario at Oswego was regarrisoned by Company H, which was replaced at Plattsburgh by Company C. In November Company I moved from Plattsburgh to Madison Barracks. In July, 1885, Company E was sent from Niagara to Mt. Gregor, N. Y., as guard for General Grant, then lying sick at that place. Upon his death the company formed part of the funeral escort from Mt. Gregor to Albany, thence to New York, taking part in the ceremonies at each place, and returning in August to its post.

On October 13, 1886, Col. Willcox received the reward of his distinguished services by promotion to brigadier-general, and left the regiment,

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after being over seventeen years at its head. Lieut.-Col. Edwin F. Townsend, 11th Infantry, became colonel, and joined soon after. Lieut.-Col. La Motte was promoted colonel 13th Infantry, December 8, and was succeeded by Lieut.-Col. W. F. Drum, who had been major 14th Infantry. In March, 1887, the law limiting the tenure of regimental staff positions to four years resulted in the displacement of Lieuts. Smith and Wotherspoon, who had held their offices more than eight and seven years respectively. 1st Lieut. Von Schrader was appointed R. Q. M., and 1st Lieut. R. K. Evans adjutant, to date April 1st. In May Company A was sent to Fort Wood on Bedloe's Island, New York Harbor, to guard the Statue of Liberty.

Late in June came an order for a move to Dakota, exchanging with the 11th Infantry, which was not received with as much pleasure as had been the one five years before. On July 26th a concentration was made at Buffalo, and the regiment was together for the first time since 1869. The companies embarked on the steamer *Vanderbilt*, the officers with families taking passage on the *India*. The trip through the lakes was delightful, Duluth being reached on the 31st. From Duluth, Headquarters and Companies E, F, G, H and I proceeded by rail to Bismarck, N. D., thence by boat down the Missouri River to Fort Yates, F being left at Fort Abraham Lincoln. Companies A, B, C, D and K moved by rail to Pierre, S. D., thence up the river to Fort Sully, K going to Fort Bennett. Thus commenced another tour of duty with the noble red man. It had an element of diversion, however, in the fact that the Dakotas were the superiors of any Indians with which the regiment had ever been thrown, and having made a start towards civilization their development could be watched with interest. Lieutenant Evans resigned as adjutant July 1st, 1888, and was succeeded by Lieutenant Howard. Major Penrose became lieutenant-colonel 16th Infantry August 21st, promoting Captain J. A. P. Hampson 10th Infantry. Lieutenant Howard's resignation as adjutant May 13, 1889, resulted in the appointment of 1st Lieutenant C. W. Abbot, Jr., to that position. In July, Companies G and H, with Troop G, 8th Cavalry, went to Bismarck to take part in the celebration of the admission of North Dakota to statehood on the 4th. In September, Companies E, G, and I, with Troop F, 8th Cavalry, from Yates, and F with I, 22d Infantry, from Lincoln, all under Colonel Townsend, camped for nearly three weeks on the Cannonball River, and spent the time in working out practical problems in minor tactics. Companies A, B and C from Sully and K from Bennett were similarly engaged at points near their respective posts. Every summer or fall since, there has been more or less field work of this nature, an instructive and pleasant change from garrison duty.

In January, 1890, Company A was sent from Sully to Fort Pierre to prevent the intrusion of settlers upon the Sioux reservation. On February 12th it was opened for settlement and the company remained as a guard. In April Company C went from Sully to the Lower Brulé Agency for the same purpose. Captain Egbert, the last officer still in the regiment who had served in it during the war, was promoted to major 17th Infantry on April 23d. Companies A and B exchanged in May. On August 26th Companies I and K were "skeletonized," the men of the former being distributed

among F, G and H, and the latter among A, B, C and D. The letter of the company at Bennett then became A. About this time the regiment was honored by the selection of its colonel as commandant of the Infantry and Cavalry School at Fort Leavenworth, Kan., and Headquarters and Company E moved to that post, arriving in September. Later on Companies B and C returned to Sully, and in November B went into camp at Bennett, to furnish additional security to the agency there in view of expected trouble leading out of the Ghost dances, which the Indians had begun, in anticipation of the coming of their Messiah.

Lieutenant-Colonel Drum in command at Yates received orders on December 12th to arrest Sitting Bull, who was, as of yore, one of the leading malcontents on the Sioux reservation. To accomplish this the cavalry at the post, Troops F and G, 8th, under Captain E. G. Fechét, were sent out on the evening of the 14th and proceeded to his camp on Grand River, whither they had been preceded by the Indian police from Standing Rock Agency. The next morning a lively fight took place, Sitting Bull was killed by the police, and his band dispersed. News of this having reached the post about noon that day, Companies G and H were ordered out, and under Colonel Drum started to reinforce the troops, which were met on their return about 23 miles out. The next day the command returned to the post. The remnant of Sitting Bull's band made its way south to Cherry Creek, and there joined a camp of dancers, which 2d Lieutenant H. C. Hale had been sent from Bennett to watch. He, at great personal risk, persuaded them to remain there until he could bring Captain Hurst, then in command at Bennett, for a further parley. They returned next day to the camp, attended only by one enlisted man and two Indian scouts, and induced both bands, consisting of 221 men, women, and children, to go peaceably to the post. This wise and plucky action received the commendation it deserved.

Company G, increased to 60 men by a detachment from H, left Yates for the field late in December, and returned in January, 1891, doing considerable marching, but having no opportunity for an encounter with the hostiles. In February, Headquarters and Company E formed part of a command from Fort Leavenworth which attended the funeral of General Sherman in St. Louis. The next month Company G moved from Yates to Fort Leavenworth. Lieutenant Von Schrader's tour as R. Q. M. expired March 31st, and he was succeeded by 1st Lieutenant P. G. Wood. Company B returned to Sully in May, and in the same month I was reorganized at Mt. Vernon Barracks, Ala., by the enlistment of 47 of Geronimo's band of Apaches then at that place under charge of Lieutenant Wotherspoon, who was put in command of the company. 30 more were enlisted at San Carlos, and 1 at Washington, which with four white sergeants, made a total enlisted of 82, the largest company in the army. The discipline and drill of these Indians has been reported as excellent, being superior in the latter, in some particulars, to the white soldiers with whom they are associated.

The abandonment of Lincoln and Bennett, in July and October respectively, sent Companies F and A to Yates. On July 4, 1892, Lieutenant-Colonel Drum died suddenly, promoting Major Hampson whose place was filled by Captain J. H. Gageby, 3d Infantry. Lieutenant-Colonel Hampson

died October 14th, and Major E. W. Whittemore, 10th Infantry, succeeded to his vacancy. The same month Headquarters and Company E, the latter increased to 60 men by a detachment from G, constituted a portion of a command from Fort Leavenworth, which took part in the dedicatory exercises of the World's Fair in Chicago, on the 21st. While there, a gentleman seeing the regimental colors, introduced himself to the adjutant as an ex-sergeant, who had served in the regiment during the '64 campaign, and told many interesting reminiscences. Finally he produced a small package, which he carefully undid, showing a much defaced gilt star and saying —"You may look at, but not touch that. It is one of the two last stars remaining on the battle flag. In front of Petersburg another sergeant and myself cut them off, and each took one. I think everything of it." This incident indicates a lesson of devotion to the principles of duty of which the flag is emblematic, that may well be taken to heart by all who now, or may hereafter, serve under the colors of the 12th Infantry. They will have the proud consciousness of the fact that the regiment has done its duty in the past. It only remains for them to sustain that reputation in the future.

NOTE:—The following names and dates appear upon a battle flag now at regimental headquarters.

Siege of Yorktown, April, 1862.	Bristoe Station, October 14.
Gaines' Mills, June 27.	Rappahannock Station, November 7.
Malvern Hill, July 12.	Mine Run, November 27.
Cedar Mountain, August 9.	Wilderness, May 5, 1864.
Bristoe, August 27.	Spottsylvania, May 8 to 19.
Bull Run 2d, August 29 and 30.	North Anna River, May 23.
Chantilly, September 1.	Tolopotomy Creek, May 30.
South Mountain, September 14.	Bethesda Church, June 1 and 5.
Antietam, September 17.	Cold Harbor, June 2 and 3.
Fredericksburg, December 13.	Petersburg, June 18 to 30.
Fredericksburg, April 30, 1863.	Weldon Railroad, August 18, 19 and 21.
Chancellorsville, May 1 to 5.	Peeble's Farm, September 30.
Gettysburg, July 2 and 3.	Chapel House, October 1.

This flag was purchased by subscription of the officers of the regiment after its return from the field. It was kept at regimental headquarters and used for several years, until it became worn and torn, when it was put away, and so remained until shortly after Colonel Townsend joined in 1886. It was then sent to the Quartermaster-General's office and restored, by having the eagle and scroll, which are very heavily and beautifully embroidered, transferred to a new field, upon which the battle names and dates were worked. It is a very beautiful object, and one highly cherished in the regiment. It is not known that another such flag exists in the service, except the battered relics now stored at the War Department.

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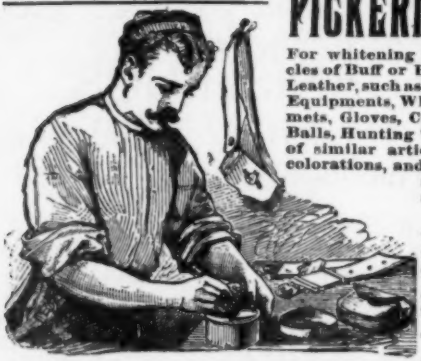

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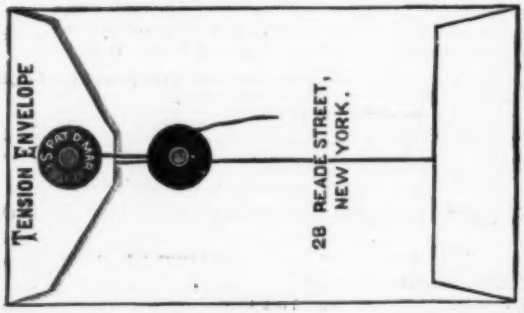

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